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No. 5801 LONDON, SATURDAY, NOVEMBER 3, 1934 CCXXVII

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT

ADDRESSES AND ORIGINAL ARTICLES

Talipes Equino-varus. By DENIS BROWNE, F.R.C.S.—(*Illustrated*). 969
Posterior Inferior Cerebellar Thrombosis. By Prof. A. J. HALL, F.R.C.P., and ELIZABETH C. EAVES, M.D.—(*Illustrated*) 975
Psychoses in Cases of Malaria following Exhibition of Atebrin. By A. NEAVE KINGSBURY, M.D., D.T.M. & H. 979
Silicosis and Malignant Disease. By Prof. J. H. DIBLE, F.R.C.P..... 982
Immunisation Against Yellow Fever with Attenuated Neurotropic Virus. By G. M. FINDLAY, M.D..... 983
Haemostatic Possibilities of Snake-venom. By R. G. MACFARLANE, M.B., and BURGESS BARNETT, M.R.C.S..... 985

CLINICAL AND LABORATORY NOTES

Abortus Fever in a Young Child. By A. A. ROBERTSON, M.B. 987
Gangrene of the Left Arm due to Occlusion of the Subclavian Artery in the Wall of an Old Tuberculous Cavity. By E. H. A. PASK, M.D... 987

MEDICAL SOCIETIES

Royal Society of Medicine: Section of Urology: Musculature of Bladder Neck 988
Liverpool Medical Institution: Manganese Poisoning 989

REVIEWS AND NOTICES OF BOOKS

Becontree and Dagenham. By T. Young, B.A. 991
The Patient and the Weather. By W. F. Petersen, M.D., assisted by Margaret E. Milliken, S.M., Vol. III., Mental and Nervous Diseases.. 991
British Journal of Surgery 992

LEADING ARTICLES

THE MEMORY OF GREAT MEN 993
IMMUNISATION AGAINST YELLOW FEVER 994
OBSTETRICS IN DUBLIN .. 995

ANNOTATIONS

The Nobel Prize Winners 996
Is Cancer Becoming More Prevalent?—(*Illustrated*) 997
Electrocoagulation in Gall-bladder Surgery 998
The Ætiology of Agranulocytosis..... 998
Voluntary Sterilisation .. 998
Reaction to Neuromuscular Impulses 999
Corrigan and His Pulse.. 999
Micro-methods in the Diagnosis of Syphilis .. 999
Surgical Instrument Craft 1000
The Value of Avertin 1000

PROGNOSIS

XXV.—Prognosis of Iritis and Iridocyclitis. Sir STEWART DUKE-ELDER, F.R.C.S. 1000

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PUBLIC HEALTH

The Quest for Sound Teeth.—Tuberculosis in Lancashire 1012
Infectious Disease in England and Wales ... 1014

THE SERVICES

Royal Naval Medical Service.—Royal Army Medical Corps.—Indian Medical Service.—Royal Air Force 1010

SPECIAL ARTICLES

Epidemic Catarrhal Jaundice. By H. H. BASHFORD, M.R.C.P... 1008
Medicine and the Law: Inquest Verdict as Evidence of Murder.—Murder for Gain.—The Case of Sidney Harry Fox.. 1009
William Harvey's Church (*Illustrated*) 1011
The London Medical Exhibition.—Books.—Spas and Miscellaneous 1014
Medical Uses of Radium: Uterine Cancer.—Breast Cancer.—Experimental Work 1019
London Medical Societies 1020
P.R. at Dental Board Elections 1007

OBITUARY

Major-Gen. Sir Havelock Charles, F.R.C.S.—(*With portrait*) 1015
David Roger Moir, M.B.. 1016
Frederic Vivian Bevan-Brown, M.R.C.P..... 1016
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The Ubiquitous Cold (Dr. L. F. Browne) 1018

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The Panel Conference and After.—National Defence Trust. Partnership with Non-Panel Practitioner 1021

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MEDICAL NEWS

Roy. Coll. Phys. Lond... 1022
Univ. of London 1022
Medical Tour of the Cote D'Azur 1010
Sale of Christmas Seals.. 1020
Institute of Medical Psychology..... 1016
Univ. of Cambridge..... 1021
Scottish Conjoint Board.. 1023
St. Mary's Hospital..... 1023
Tuberculosis Association. 1023
Vienna Post-grad. Courses 1023
Royal Sanitary Institute 1023
Industrial Welfare Society 1023
Univ. of Manchester 1023
Glasgow University Club 1023
Edinburgh Graduates Association..... 1023
Fellowship Med. and Post-Grad. Med. Assoc. 1023
Post-graduate Work in Newcastle 1024
Central Association for Mental Welfare 1024
Port Regis Preparatory School 1024
Health Education Conference 1024
The Irish Sweepstake 1024

PARLIAMENT

Notes on Current Topics: Reassembly after Summer Recess 1024
House of Commons: Reports on the Derelict Areas.—Slum Clearance.—Disposal of London Refuse..... 1024

NOTES, COMMENTS, AND ABSTRACTS

Medical and Social Services in Leningrad and Moscow. By DORIS M. ODLUM, M.R.C.S. 1027
Special Centres for Radiology..... 1029
Tom Tiddler's Ground .. 1030
Certificate A 1030
Danzig Doctors Protest.. 1030
Ciba..... 1030
New Preparations: Ephedrine 1030
Chemistry in Commerce.. 1030

Medical Diary 1025
Appointments 1026
Vacancies 1026
Births, Marriages, Deaths 1026

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ADDRESSES AND ORIGINAL ARTICLES

TALIPES EQUINO-VARUS *

BY DENIS BROWNE, M.B. Sydney, F.R.C.S. Eng.
SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON

Pathology

THE normal new-born child shows evidences of the pressure of its surroundings before birth. In the uterus it has been folded into the smallest possible space, and it keeps this attitude for a short time after birth, as the wings of an emergent insect show the folds in which they lay in the cocoon. The bent knees are held up against the belly in a position that would be extremely uncomfortable for an adult, and the feet are fixed in calcaneus, going up much further than the adult range of movement, and downwards into equinus not so far.

In addition, wherever a sharp bony point has lain against the uterine wall, the tissues over it have been compressed and become adherent, so that they remain as small pits when with the release of pressure the surrounding parts stand up. "Dimples" of this sort, best marked in the young and plump, are familiar to everyone over the knuckles, the elbows, and the posterior superior iliac spines.

THE GROUP OF "MOULDING DEFORMITIES" TO WHICH TALIPES BELONGS

If the single assumption is made that this mechanical pressure on the fœtus may in certain cases be increased, it can be deduced that a certain series of deformities would follow; and in actual life all these deformities are found exactly as they can be thus prophesied, in their external shapes, their internal structure, their changes of function, their relative frequencies, and their association with each other.

Abnormal dimples are caused by increased pressure bringing into contact with the uterine walls bony points that normally would not touch it. They are found as depressed marks, usually called scars, over the external condyle of the femur (Fig. 3), the acromial process of the scapula, or the apex of the bend in a "congenital fracture" of the tibia. Occasionally these marks run the entire length of a long bone, the femur, or the subcutaneous edge of the tibia in a case of absent fibula.

Lumbar spina bifida could be produced by a very early increase of pressure exaggerating the normal curve of the back and so interfering with the joining of the edges of the neural groove. This may be illustrated by the transverse gaping of a longitudinal slit in a rubber tube when it is bent. As explained later, there would be a special liability to moulding deformities of the feet in these cases. (Fig. 1 A.)

Acrocephalo-syndactyly could be caused by the hands becoming jammed between the uterine walls and the front or sides of the head. (Fig. 1 B.) If this increased the transverse diameter of the head the palatine processes would have difficulty in joining, so explaining the frequency of cleft palate in this condition.

Mouldings of the hands alone would be infrequent, owing to the shelter of the overhanging head. The displacement would be usually towards the palmar aspect, from pressure of the uterus against the dorsum.

Mouldings of the feet would be the commonest of all deformities of this class, as the feet can be more displaced than any other part, are not sheltered by the head, and owing to their stiff consistency and irregular shape do not conform as easily as do the hands to the uterine concavity. (*a*) *Calcaneus* from pressure on the soles of the feet in the normal folded-legged position would be the most common. It is difficult to say when this exceeds the normal calcaneus of the newly born enough to count as a deformity. (Fig. 1 F.) (*b*) *Longitudinal bending* of the foot would be the next most common, occurring in the same folded-legged position when the feet swing inwards, taking the uterine pressure on their outer borders instead of on their soles. (Fig. 2.) It is to this group that the classical "talipes equino-varus" belongs. (*c*) *Mouldings of the feet combined with spina bifida* would be caused by the abnormal bending of the back, which has prevented the proper formation of the spine, pointing the lower limb buds upwards, so that the legs would grow straight upwards past the neck instead of folding normally in front of the belly. The result would be the well-known syndrome of flexed hips, hyper-extended knees, and irregular calcaneus talipes. (Figs. 1 A and 1 F.) Other forms of talipes with corresponding joint positions could also occur, but less commonly. (*d*) *Atypical talipes* of various kinds are occasionally found. But their form is always consistent with the pressure of the uterine wall on whichever aspect of the foot the position of the leg has left exposed to it. (Figs. 1 E and 1 D.) An interesting analogy for acrocephalo-syndactyly is the case in Fig. 1 C, with exactly corresponding mutual damage of the feet and face, combined with the necessary flexion of hips and hyper-extension of knees to bring them together.

* An Arris and Gale lecture delivered before the Royal College of Surgeons of England on Feb. 13th, 1934.

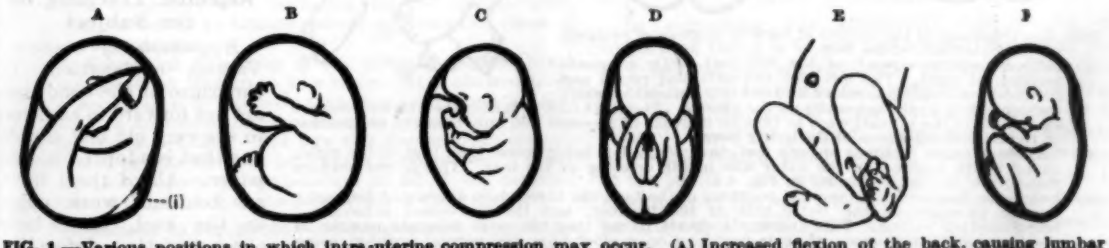

FIG. 1.—Various positions in which intra-uterine compression may occur. (A) Increased flexion of the back, causing lumbar spina bifida (marked i) and extension of the legs with calcaneus talipes. (B) Jamming of the hands against the head, causing acrocephalo-syndactyly. (C) Jamming of the feet against the face, in a case of the author's. Note hyper-extension of knees. (D) Symmetrical talipes due to compression of the feet together, in a case of the author's. (E) Irregular talipes due to compression of the feet together, in a case of the author's. (F) Calcaneus talipes associated with a spina bifida occulta, in a case of the author's.

TRUE NATURE OF THE DEFORMITY CALLED "TALIPES EQUINO-VARUS"

When the foot which has been caught in the folded-legged position turns inward under the pressure of the uterine wall, there ensues a series of deformities gradually increasing in severity with increase in the pressure. This series can be conveniently divided into three parts.

In the first the forepart of the foot alone meets the moulding force and is bent inwards. This is usually called "metatarsal varus" (Figs. 2 and 3) (following the confusing practice of describing deformities in terms of normal movements of joints), though the sole of the foot remains horizontal so that there is no varus in the ordinary sense.

In the second degree of pressure the whole foot is moulded to conform to the uterine curve, the heel bending inwards behind the fixed point of the ankle-joint and the forefoot in front of it. In addition the pressure on the outer side swings the foot as a whole into varus, and, owing to the inclinations of the joint surfaces, into equinus as well. The classical description ignores the actual bending deformity, and describes the result in terms of the secondary joint movements as "equino-varus." (Figs. 2 and 3.)

In the final degree the bending of the foot is so severe that the forepart swings round to lie with the big toe pointing straight upwards along the tibia. The equinus completely disappears, and the deformity is described as "extreme varus," though the support of the underlying thigh prevents the plane of the sole from passing much beyond the vertical. (Figs. 2 and 4 A.)

In all three degrees the leg bones are prevented from twisting by the balancing of the pressure on the heel against that on the forefoot, and prevented from bending by the support of the underlying opposite thigh. The muscles are atrophied, as would be expected from immobilisation; and their balance is upset owing to the stretching of the peronei and extensors while their stronger opposing groups are left contracted. But there is no true paralysis.

On dissection the internal structure of the foot is exactly what would be expected from its external appearance, the greatest displacement being naturally round the apex of the curve at the astragalo-scaphoid joint.

FIG. 3.—Case of "talipes equino-varus" of the right foot, and "metatarsal varus" of the left. Note the dimples over the external condyles of the femur, in series with those over the knuckles.

When the deformity is single it is never very severe, as if one foot is normal there cannot have been a very high pressure. When it is double the deformity is never exactly equal, as the foot that has been on the outer side in the cross-legged position is always about 10 per cent. worse than the sheltered one. But there is never a very severe deformity on one side and a very slight one on the other. (Figs. 3 and 4 A.)

This deformity, in which the stronger muscles are favoured, gets worse automatically, in contradistinction to the common calcaneus, which is self-corrective owing to the excess of power of the calf muscles over their opponents. In addition, walking increases the curve in which weight is transmitted to the ground, long clothes and bedclothes bend the forefoot down and in, and the automatic reaction of a child to a splint is to turn the forefoot into equino-varus when trying to drag it free.

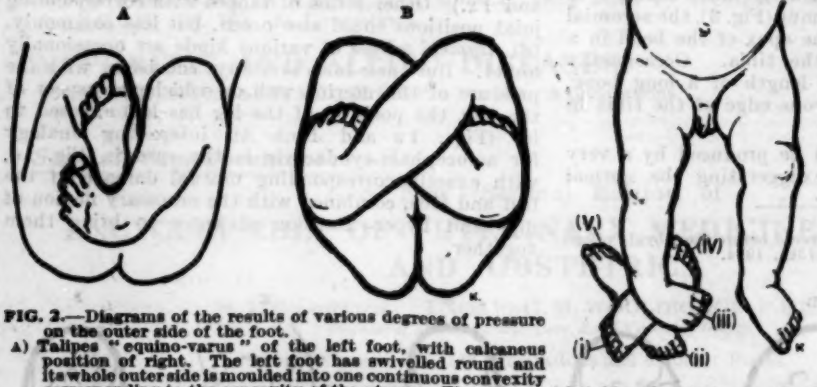

FIG. 2.—Diagrams of the results of various degrees of pressure on the outer side of the foot.

(A) Talipes "equino-varus" of the left foot, with calcaneus position of right. The left foot has swivelled round and its whole outer side is moulded into one continuous convexity corresponding to the concavity of the uterus. The right foot is taking the uterine pressure on its sole in the normal way, so that an increase of pressure will only result in an increase of the normal calcaneus of the newly born.

(B) "Extreme varus" talipes of both feet, that of the left being worse than that of the right, owing to its position on the outer side in the crossing of the legs. This is the position responsible for the deformity in Fig. 4 A.

(C) Composite diagram of the normal positions of the feet, the three main degrees of deformity due to pressure on the outer side of the forefoot, and the "reversed deformity" corresponding to this. This diagram suggests to me that the most accurate naming of these would be by means of their positions on a clock-face, the normal position being 3 o'clock, the "orthopædic position" 6 o'clock, "extreme varus" 1 o'clock, &c. (i) Normal position of foot. (ii) "Metatarsal varus," the first degree of twisting inwards under pressure. (iii) "Talipes equino-varus," the next degree. (iv) "Extreme varus," the maximum degree of inward twisting. (v) The reversed deformity from position iv, the only one with any claim to be called "over-correction."

Rejected Teaching on the Subject

Hypothesis of origin.—Various explanations of the cause of the condition are put forward in addition to the very old and simple one that is adopted in this paper. All of them have an Achillean weak point in the heel, for whose characteristic deformity they offer no explanation whatever; nor do any of them give reasons

for the association of the different elements of the "moulding" deformities and their relative frequencies.

1. *Nervous causation.*—The main point in favour of this is the occasional coexistence of spinal deformities and their secondary paralytic and trophic effects. I have already offered an explanation for this. Apart from this the nerves could only act through the muscles, and the shape of the foot has only a superficial resemblance to anything that could be produced by purely muscular action.

2. *Arrested development.*—This explanation is that during intra-uterine life the foot goes through various evolutions, and that arrest at appropriate stages accounts for the various types of talipes. The objection to it is that positions and shapes with any real resemblance to talipes never occur in the normal development of the fœtus.

3. *Hydraulic pressure.*—Jansen suggests that certain types of cells are more sensitive than others, and so can be harmed disproportionately if there should be an abnormal increased pressure of the amniotic fluid. This is rational as an explanation for conditions like achondroplasia or cleido-cranial dysostosis, where the damage is confined to certain types of cells irrespective of the region of the body in which they lie. But it obviously will not apply to the case of talipes, where the damage is confined to one region of the body irrespective of the types of cells which compose it.

4. *Defective germ-plasm* as an explanation gives no reason why the deformities should always conform to shapes consistent with moulding by the uterine wall, instead of taking an infinite variety of forms like those of flints or potatoes.

5. *Congenital dislocation of the astragalo-scaphoid joint* is suggested by Brockman as a cause. It is obvious from the appearance of the foot that this joint must be displaced to an extent corresponding to the severity of the longitudinal bending. But how this displacement moulds the heel or tilts the foot into varus I cannot see. Apart from this it gives no explanation at all of the atypical forms of talipes, nor of the association of deformities.

Objections to the mechanical compression hypothesis of causation.—The most rational one is that there are no consistent records of lack of amniotic fluid at the births of children with club-feet. The amount of this fluid at any birth, however, is almost always very vaguely estimated, and a normal amount then does not necessarily mean a normal amount throughout pregnancy. Mercer objects that compression is unlikely as a cause because talipes is uncommon in twins; but then Lovett and Jones say that it is more common in multiple pregnancies. Many writers mix up mechanical with hydraulic pressure and argue accordingly, or object that it does not explain such conditions as intra-uterine amputations or achondroplasia.

The name "talipes equino-varus," if the account given here is correct, is not only incomplete in the description of the deformity that it appears to give, but actually misleading. All deformities must be considered and described in three dimensions. But the classical name mentions the equinus, which is a secondary and inconstant deformity round an axis running horizontally from side to side through the ankle; it mentions the varus, which is a secondary deformity round an axis running horizontally from back to front through the ankle; and fails entirely to mention the primary and constant deformity of the curving inwards of the sole and heel round a perpendicular axis at right angles to each of the other two.

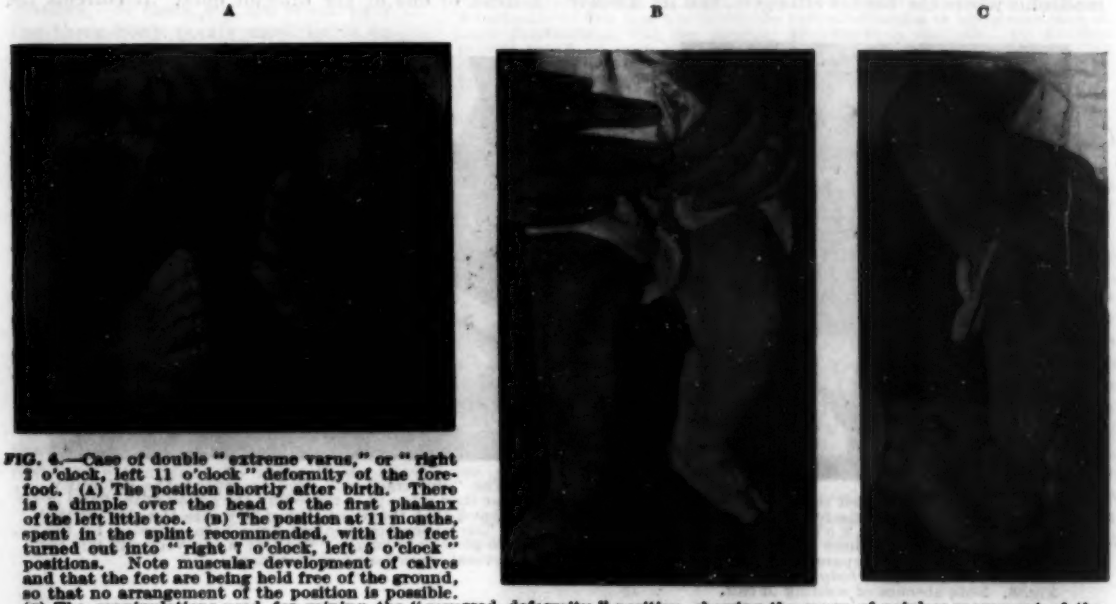

FIG. 4.—Case of double "extreme varus," or "right 2 o'clock, left 11 o'clock" deformity of the forefoot. (A) The position shortly after birth. There is a dimple over the head of the first phalanx of the left little toe. (B) The position at 11 months, spent in the splint recommended, with the feet turned out into "right 7 o'clock, left 5 o'clock" positions. Note muscular development of calves and that the feet are being held free of the ground, so that no arrangement of the position is possible. (C) The manipulations used for gaining the "reversed deformity" position, showing the range of painless movement of the forefoot.

Treatment

AIMS OF TREATMENT

In correcting the structural defects the one important thing is to get the forefoot naturally used and held at the correct angle to the sagittal plane of the body; that is to say, pointing outwards about 20°, as in the military position of attention or the classical pose for boxing. (Fig. 4 B.) In addition, of course, there must be full range of movement of the joints. No direct attack is necessary upon the deformity of the heel; if the forefoot is used correctly and freely it will grow from its inward bending to perfect straightness and almost normal size. In correcting the functional defects, the defective muscle balance and the weakness of the atrophied muscles, it is necessary that whatever device corrects

the position of the forefoot should also permit of its being used. This principle of the simultaneous correction of structure and function is of the utmost importance.

METHODS OF TREATMENT

Correcting the longitudinal bend of the foot can be very well done by the hands alone up to about 2 years of age. When the foot becomes too rigid this can be done by a woodworker's vice, fixed to the end of the operating table by a large ball-and-socket joint. On one side of the vice a block of wood is fixed, with a notch cut in it so that the two edges of the notch act as points of pressure; between these two points in the opposite direction presses the apex of a wedge-shaped prominence on a similar block on the other side. The foot is placed between these two blocks, with the single point pressing on the apex of the longitudinal curve, just in front of the external malleolus where the bone is strongest, and its concave inner border opposite the concavity of the notch in the other block. When the vice is screwed up, the deformity is reversed by forcing the foot into the notch so that it has a longitudinal bend convex inwards instead of outwards.

Gaining normal movement of the joints is done by forcing the forefoot round into full "calcaneo-valgus." (Figs. 4C and 2C.) This again can best be done by the hands up to the limits of their strength. To get their full force the palm should be applied to the sole of the foot, while the four fingers curl round the back of the ankle.

When the feet are too stiff for this, the same result can be gained by an arrangement rather like a large pair of nut-crackers (Fig. 6), the one essential mechanical point about them being that the axis of the hinge-joint that connects the two limbs must coincide with the axis of the ankle-joint. The limbs of the "nut-crackers" are stout oak boards; the hinges are bolts joined together by eyes at their ends. By means of butterfly-nuts on the bolts it is possible to control the position of the hinges and the inclination of the boards to each other to suit different cases. The patient's leg is strapped to the lower board by sticking-plaster, the foot turned outwards to a suitable degree against the upper one, and then they are forced together.

The maintenance of the bending out of the forefoot, together with allowing the action of the muscles and the use of the foot, can be obtained by connecting the feet horizontally at the desired angles to the sagittal plane. (Fig. 5.) To hold the feet I use foot-pieces made by cutting out an L-shaped piece of 14-gauge hard aluminium, and bending up one side to clear the external malleolus and bear against the outer side of the leg. Then these are fixed by friction-joints at any desired angle to an aluminium cross-bar, normal feet pointing the usual 20° outward, and talipes feet anything up to the normal limit of 90° outward from the sagittal plane. There is no space here to discuss the extremely complicated mechanical and anatomical factors of this device, but since I stumbled upon it the treatment of talipes has become one of the easy departments of surgery instead of one of the difficult ones. It corrects the main structural element of the deformity efficiently, at the same time allowing the correction of the functional troubles. The other devices which I have used have been inefficient in correcting structure, and ignore function completely.

FIG. 5.—The splint applied to a fairly severe left talipes. Note that the foot is turned out into the "left half-past 2 o'clock" position, the sole-piece of the splint being bent into valgus to do this. Compare the position of the foot in *regard to the body* as a whole with Fig. 8. Note absence of wasting of calf.

FIG. 6.—The "nut-crackers" used to reverse the deformity. Note that they attempt to reproduce the action of the hand in Fig. 4C, and that there is nothing to injure the skin or the joints. The upper board might have been adjusted by the screws to give more valgus. The foot was a very stiff one on which several operations had been done.

Small babies spend the first nine months or so continuously fixed in this splint with sticking-plaster, with fortnightly changes and manipulations. They are encouraged to kick and to stand up in the splints as much as possible. When the feet are both held naturally in the correct position of rest, and have the full range of movement, and the child can take a few steps with support, the sticking-plaster in which it has spent all its life so far is changed for a pair of boots, riveted to the sole pieces to hold the feet in the same position as before. These boots are completely straight in shape, so that there is no difference between right and left feet, have open toes, and unlace completely from one end to the other. In consequence there is no need for complicated fittings, and one pair will usually last a child for the complete period of treatment, the toes simply sticking out of the open end as the foot grows.

Thus the child can be let off the splint for a run when necessary, but its feet are held quite securely

when the splint is applied, as it should invariably be during sleep or rest. Any mother understands how to put on a pair of boots, and no child can kick out of them.

Older children, after the feet have been corrected by the vice described, can be put directly into this boot-splint and given walking practice and manipulations as soon as possible. I have often been struck by the absence of pain and tenderness after forcible correction. Possibly it is due to the lack of any friction and displacement of the skin, of the sort that is unavoidable with the Thomas wrench. If, however, great violence has been used it is probably best to put up the feet in plaster-of-Paris for a week or so, fixing them to the splint at the required angle. "Bunion-plasters" of thick felt are stuck over the three bony points most liable to pressure, the two malleoli and the underside of the joint of the big toe. Then a light plaster is put on and allowed to set while the foot is fixed on the ground and the weight of the surgeon used to force the foot into calcaneo-valgus by pressing the knee downwards and forwards.

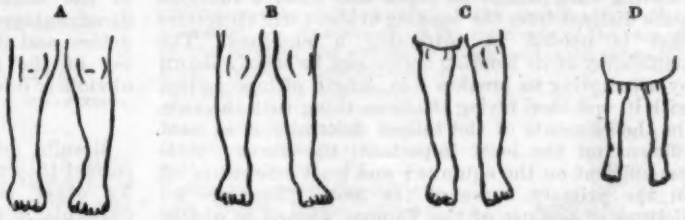

FIG. 7.—Tracings of illustrations in standard text-books to show what are considered satisfactory results of open operations. (A) A case before open operation. (B) Same case as (A) after open operation, feet barely into "orthopædic position," and still far short of normal inclination to the body. Admittedly in this case the deformity before operating is less severe than in most illustrations, but the position afterwards is the rule. (C) Another typical result of open operation. (D) Result of open operation, showing right foot not brought even into "orthopædic position," so that to get it to point straight forward the knee-cap has to be rotated out.

REJECTED FACTORS IN TREATMENT

The conception of the normal position of the foot as pointing straight forward is, judging from their illustrations and the splints they design, almost invariable among orthopædic surgeons. Figs. 7 and 8 show how they are content to bring the bending-in of the forefoot back only to the sagittal plane, instead of to an angle of 20° outward from it, which I believe to be the true normal position of rest and most efficient use. If I am correct it is not strange that it should be noted that these cases have an inveterate tendency to relapse, as they have never been brought to normal position.

Apart from the opinions on this point of the "Manual of Infantry Training" and the teachers of boxing, it may be noted that Hamilton Russell used to teach that the very common occurrence of pointing-in of the toe after fractures of the tibia was due to the vertical position of the foot-piece of the ordinary back-splint, upon which so many of them are treated.

The use of the term "over-correction."—This is logical enough when it is applied to the process of forcing a deformity back to normal, and then continuing the process so that a deformity the reverse of the original one is produced. But it appears to me a confusion of thought to use it for putting the foot in a position which its joints can quite easily compass normally. If one turns a knock-knee into a bow-leg one has over-corrected it; but would one say that a flexed elbow has been over-corrected when it is straightened out?

I suggest that the proper phrase to use to clear our minds is that of reversing a position or a deformity rather than over-correcting it. A tibia that is bent inwards can be brought to normal, and then by continuing the use of the same force brought into the reversed *deformity* of being bent outwards. A foot fixed in equinus can be brought into the normal position of rest, and then by continuing the use of the same force into the reversed *position* of calcaneus.

The position that orthopædic surgeons call over-correction of talipes equino-varus is a curious one. (Fig. 8.) It corresponds to the use of the Thomas wrench in that the three elements of the deformity are corrected with a thoroughness in inverse ratio to their importance. The varus is sometimes, though not always, corrected to the normal limits of valgus (Fig. 8 A); the equinus is corrected tom uch less than the normal limits of calcaneus in the child or in those races which have preserved full freedom of the ankle-joint by habitually squatting; and the inward curve of the forefoot, the most important part of the deformity and the only one in which over-correction would be either possible or useful, is not even brought into the normal position in regard to the body as a whole.

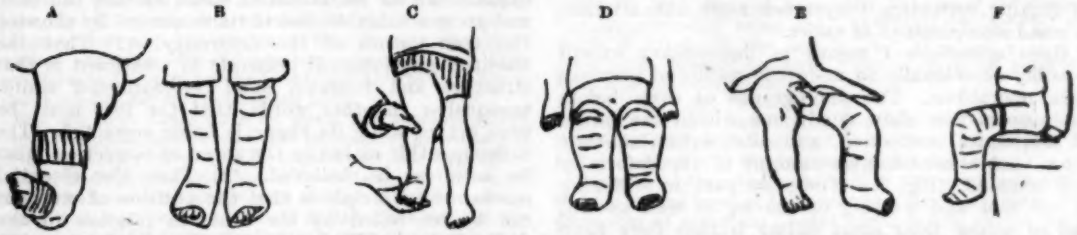

FIG. 8.—Unselected series of tracings of illustrations in standard text-books to show what the authors either expressly state or imply to be "over-correction." Note that in none of them is the normal inclination of the foot to the body attained.

The Thomas wrench.—Everyone agrees that the only fault of the hands as instruments for correcting club-feet is lack of strength; that for babies' feet, where the unaided force of the human grip can overcome the resistance of the tissues, no other instrument should be considered. Is it not strange then that, when something stronger is needed to overcome precisely the same deformity, one should turn to a mechanism working on totally different principles—the Thomas wrench? The deformity remains the same; surely it is not an illogical suggestion that if the Thomas wrench is the best method of correcting

it we should use a miniature one on babies' feet, or if the hands are the best instruments, we should imitate them as well as we are able to manipulate the feet of older children?

The Thomas wrench is, as its name indicates, a modification of the instrument commonly used for twisting such things as pipes and nuts, a function quite distinct from the bending of short stiff structures that is needed in correcting a club-foot. The inefficiency of its bending action can be clearly shown by attempting to break a 6-in. length of broom-stick with it, and then trying the same thing with the vice. On the elements of the talipes deformity it is most efficient on the least important, the varus; it is less efficient on the equinus; and least efficient of all on the primary curve of the foot. There are no pictures of the use of the Thomas wrench to obtain a complete reversal of the deformity, of the kind obtained by the hand in Fig. 4 c or by the vice in Fig. 6; and this is for the reason that it is impossible to obtain this position by its use. Finally, its rubber rollers, which grip the skin and slip together with it over the bones beneath, produce the maximum of soreness.

It is, of course, possible to break down the bony resistance of a foot by the skilled use of this instrument. But this breaking-down is distributed over the weaker parts of the skeleton, the metatarsals and ankle-joint, rather than concentrated where it should be, on the block of bone that forms the centre of the curve just under and in front of the external malleolus.

Tenotomies, many of which I have performed myself, I now regard as among the worst of surgical crimes. The temporary ease of forcing the foot into position after cutting the tendo Achillis or the tibiales is gained at the price of irreparable damage to the patient. The muscles, cut off from their insertions, shrink up and degenerate permanently; it is curious, remembering the disastrous effects of cut tendons on the usefulness of the hands, to see how lightly a similar injury is inflicted upon the feet. Besides this, the extravasation of blood between the separated ends of the tendon and its subsequent organisation into actively contracting scar tissue have the final result of making correction very much more difficult than it was before, instead of easier.

Open operations I regard as unnecessary except possibly occasionally to undo the results of previous open operations. The photographs of cases before these operations show conditions within the power of mechanical correction, and after operation they show that a considerable amount of the deformity still remains. (Fig. 7.) The price paid in stiffening of the foot and wasting of the leg is well known, and of course their great failing is that they have no effect in increasing the range of movement of joints in the way that manipulation does.

Plaster-of-Paris in treating talipes has the faults of its virtues elsewhere. It gives complete immobilisation, which is the last thing wanted, except occasionally for a short time to ensure freedom from pain after forcible manipulations.

Sticking-plaster is excellent as a means of transmitting a pull to the foot from some fixed point. But in the methods which employ sticking-plaster alone, the difficulty is that there is no fixed point available. It is quite impossible to correct properly the bending-in of the forefoot in relation to the body as a whole by means of sticking-plaster.

Club-foot shoes.—In the splint I have recommended, the essential notion is that the efficiency of club-foot shoes can be very greatly increased by fixing them at definite angles to a connecting-bar. The exact forms used are of no great importance. I think my own models are cheaper to make and easier to adjust than most.

Grip on the bent knee.—The commonest way of turning the forefoot outwards is, of course, the use of the bent knee as the point of purchase. Its disadvantages are the putting of the muscles out of action, and the production of knock-knees by stretching of the internal lateral ligament. It is quite obviously inferior in every way to the other principle.

Results

Results are implicit in the argument: if it is correct they must be much better than those obtained by other methods. I believe them to be so, particularly in the suppleness of the foot and the muscular development of the calf. Of course the surgeon's difficulties vary with the degree of moulding of the foot, but any case that comes for treatment soon after birth and that can be fairly called equino-varus (that is to say in which the foot has not been twisted up and in beyond the horizontal) should be permanently cured by the time the child can walk alone. The calf should be only about a quarter of an inch less in circumference than the sound side in unilateral deformities, and it should be possible to get both calves equal by exercises in later years if it is considered worth the trouble.

Previous treatment may, of course, render a result like this unobtainable. If the foot has been immobilised in plaster the original wasting of the calf will be greatly increased; if a tendon has been cut it will be worse still and the ankle will be stiff in addition; while an open operation means that the child will be permanently in the cripple class.

Summary

I have tried to cover so much ground in the limits of this paper that it is rather like a summary itself. It is an attack upon the whole of present teaching about this condition, and this attack turns on three main points. (1) That the accepting of the compression hypothesis of the causation of talipes places it in a definite group of congenital deformities, explains all its variations of structure and function, and gives a valuable clue to its treatment by showing the true nature of the deformity. (2) That the essential physiological principle in treatment is that structure and function shall be corrected simultaneously; in other words, that the foot must be kept active while its shape is being corrected. The difference this makes to the speed of correction must be seen to be believed. (3) That the essential mechanical principle is that the position of one foot can be controlled by the other in relation to the sagittal plane of the body.

My best thanks are due to Mr. C. A. Keogh, F.R.C.S., for his drawings in illustration of this paper. It is hardly necessary to point out that not all of the drawings are his; the responsibility for the others is the author's alone.

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POSTERIOR INFERIOR CEREBELLAR THROMBOSIS

WITH UNUSUAL FEATURES

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OCCLUSION of a posterior cerebellar artery gives rise to a well-defined group of symptoms. In a typical case there is sudden vertigo, inability to swallow, and more or less sensory loss, usually unilateral in distribution and of dissociated kind.

The case to be described here, whilst conforming to the above classical syndrome so that a correct diagnosis was easily made, proved on further investigation to differ materially from any of those hitherto recorded. Instead of the unilateral sensory loss being of the "dissociated" type, all forms of superficial anæsthesia were involved to a greater or less extent over the whole of the affected area. The man died of uræmia within three months of the attack, and it was expected that histological examination would reveal some additional lesion which would explain this anomaly. The only lesion found was such as is known to follow occlusion of the posterior inferior cerebellar artery.

Case Record

A glass-blower, aged 33, a patient of Dr. H. E. McLaughlin of Barnsley, was admitted to the Sheffield Royal Hospital on Jan. 25th, 1931.

HISTORY

About three months ago, he had had a series of bad headaches followed by severe epistaxis. One afternoon, whilst taking tea at a friend's house, he suddenly felt dizzy, and vomited. The right side of his face was also drawn up and the right eye closed. (He was quite certain about it being the right eye.) He also found that he had lost control of the right arm and leg. He could move them but did not know exactly where he was putting them, and could not feel whether the right foot was on the ground or not. At the same time he was unable to swallow anything. He did not lose consciousness. With considerable difficulty he was eventually able to walk home (about a mile), his wife supporting him.

For the next three days he could not swallow either solids or liquids, and he said that he had lost all sensation on his right side. After that he began to be able to swallow liquids, and on admission could do so fairly well, though he still had some difficulty with solids. After five or six weeks sensation began to return in the right side, in the form of a painful tingling when any part of the side was exposed to heat or cold. The right side of the face also became painful on shaving. Two days before admission he found that he began to have pain in the right hand and leg, and had some difficulty in moving the latter.

Previous health.—"Rheumatism" three years ago. Tonsil operation at age of 11 years. Had a discharging right ear in 1918. *Family history:* nothing significant. Mother crippled with rheumatism; father still alive and well.

CONDITION ON ADMISSION

Looked ill. Respiration-rate 20. Temperature 99·5° F. Pulse-rate 100–110. Vessel walls thickened and hard. Blood pressure: systolic 225; diastolic 150. Apex-beat in fifth left space, 4 in. from midline. Dullness increased. Accentuated second sound in aortic area. Systolic murmur at apex conducted to axilla. Urine: specific gravity 1004–1010; acid; albumin ++; no casts or red cells; average daily quantity about 750 c.cm.

Cranial nerves.—I. Sense of smell normal. II. No loss of vision; fields apparently normal. Some of the retinal arteries show a "silver-wire" appearance; no papilloedema, retinitis, or hæmorrhages. III., IV., and VI. Extrinsic eye muscles normal in action; no squint or deviation, no nystagmus, no ptosis; pupils small, round, equal, active to light and on accommodation. VII. No facial paralysis, but slight overaction of the right side pulling up the right corner of the mouth; eyes close normally. V. Anæsthesia on the right side of the face up to the level of the eyebrow; touch and pain sense lost here, but temperature still imperfectly appreciated. Masseters and temporals contract normally. VIII. Hearing good—15 in. watch each side. IX. and XI. No dysphagia now (right side of soft palate moves little); articulation shows no defect. XII. Tongue protruded straight, readily, and without tremor.

Arms.—Not wasted, not spastic; no contractures. Muscular power of right arm is less than that of left but there is no paralysis of any group of muscles. Biceps jerks increased equally on two sides. Triceps and supinator jerks not obtained. Coördination fairly good; no obvious ataxia in right arm. Joint sense of position good. Stereognosis impaired on right side.

Abdomen.—Anæsthesia of right half; incomplete in an area below the umbilicus. Reflexes brisk on both sides—more marked on the right than the left. No rigidity.

Legs.—No wasting. Both legs rather stiff. No spasticity. Motor power fairly good in left leg, rather poor in right, though the inability to lift the knee against opposition seems to be chiefly due to the pain complained of at the right hip. He can keep the leg extended when the thigh is lifted off the bed. Knee-jerks present on both sides but not easily obtained. Ankle-jerks not obtained. Plantar reflexes: right feeble, flexion; left, violent withdrawal of foot and flexion of toes. Sense of position of feet is fairly good. Slight ataxia in the right leg.

FIG. 1.—Area of distribution of sensory loss (shaded). At A, C, and E, light touch is felt. At B and E pain is felt. At D all sensation normal.

Sensation.—Over the right half of the trunk and limbs as high as the level of the eyebrow (Fig. 1, D) there is a gross loss of sensation. Light touch is lost except for a small area over the peripheral half of the dorsum of the right foot and toes (Fig. 1, C), another in the lower abdomen (E), and another around the hollow of the right elbow (A). There is partial loss for a short distance above the right eyebrow. Sensibility to slight differences of temperature is very much diminished over the same area, but gross differences are detected with difficulty. There is complete analgesia over the same region, except for two areas in the right leg: one on the peripheral part of the dorsum of the right foot and toes (C), the other in the middle part of the front of the right shin (B).

The diagnosis on admission was posterior inferior cerebellar thrombosis in a patient with advanced granular kidney.

COURSE OF ILLNESS

During the four days after admission (on Jan. 25th) he had attacks of pain in both hands, associated with swelling and redness along the dorsal tendons, with a slight rise

of temperature. (The exact nature of these is obscure.) Pains in various joints also occurred, together with attacks of nose-bleeding. On Feb. 4th symptoms of uræmia set in. He had dyspnœa and became very restless, trying to get out of bed. There was also some difficulty of swallowing. These symptoms continued much the same until his death on Feb. 8th. While he was in hospital there was always a considerable amount of albumin in the urine. The blood non-protein nitrogen rose from 91 mg. per 100 c.cm. on Jan. 29th to 108 mg. on Feb. 5th. The blood Wassermann reaction was negative on Jan. 30th. The average daily quantity of urine was about 700 c.cm. but became less three days before death.

At autopsy on Feb. 9th there was œdema of both lungs; the kidneys showed typical changes of arterio-sclerotic granular kidney; there was marked hypertrophy of the left ventricle; the valves were normal. Except for some calcified mesenteric glands in the region of the appendix there was nothing abnormal in the trunk. There was some atheroma of the arteries at the base of the brain, but no softening.

EXAMINATION OF BRAIN STEM

The brain stem was removed for microscopic examination.

The left vertebral artery was slightly larger than the right. There was a slight narrowing of the right artery at its origin. The two arteries united to form the basilar about 0·5 cm. below the border of the pons. The left posterior inferior cerebellar artery was larger than the right. The left originated considerably below the olive, the right at a slightly higher level. The left anterior inferior cerebellar artery was large, and arose from the lower part of the middle third of the basilar artery, slightly less than 0·5 cm. above the lower border of the pons. The right artery was very small and originated at the same level. The left superior cerebellar was larger than the right. The right artery bifurcated almost immediately, the left 0·5 cm. distant from its origin.

The point of importance, in view of the history and the post-mortem findings, is the small size of the posterior and the comparatively large size of the anterior inferior cerebellar artery on the left side. Apart from this, most of the variations of the vessels on the two sides—for example, the duplication of the superior cerebellar arteries—were within the normal limits as described by Stopford.

Portions of the spinal cord, medulla, pons, mid-brain, and internal capsule were embedded in celloidin, and one small piece of the medulla and pieces of both right and left sides of the optic thalami and post-central cortex in paraffin. The methods used were as follows: (1) Weigert-Pal preparations: some counterstained with alum carmine, others with alcoholic eosin. (2) Nissl's method. (3) Mallory's phosphotungstic acid hæmatoxylin.

In Weigert-Pal preparations it was seen that the degeneration on the left side of the medulla occupied a smaller area than that usually described as being supplied by the posterior inferior cerebellar artery (see Figs. 2 and 3). This degeneration was in the region in which is situated the lateral spinothalamic tract and the tract of Gowers.

Although the degeneration was obvious in specimens examined under a low power or with the naked eye, under the high power it was found not to be complete, as some fibres retained their myelin sheaths. The olivo-cerebellar fibres were very little altered, also the restiform bodies. The olives were normal. The pyramids appeared rather pale, but there was no definite degeneration. There was no obvious alteration in the mesial fillet. The posterior columns appeared well myelinated to their final termination in the medulla.

In Nissl preparations changes were found in the nucleus ambiguus of one side, consisting in a decreased number of cells, as compared with the opposite side, and chromatolysis of the remaining ones. Some of the emerging fibres of the vagus were degenerated. The hypoglossal nuclei and nerves were normal. Around some of the vessels in the medulla there were accumulations of small round cells. This was not found in other parts of the central system, for example in the cerebral cortex. The post-central cortex appeared normal. No difference was observed in the histological appearance of the right and left optic thalami, slight post-mortem changes only being present.

It was hoped that the examination of the different levels of the pons and mid-brain would give some indication of the path taken by the spinothalamic fibres in these regions. The degeneration was traced upwards to the junction of the medulla and pons (see Figs. 5 and 6). At a high level of the pons, apart from the fact that the mesial fillet appeared rather narrow on both sides, nothing unusual was observed (Fig. 7). In the mid-brain and in the internal capsule there was good myelination of fibres.

The fact that the degeneration in the brain stem could not be traced in a vertical direction from the medulla, any higher than the lower part of the pons, emphasises how little is yet known of the exact path taken by the spinothalamic tracts above the level of the medulla. There are two possible explanations of the fact that the fibres cannot be traced. It is generally assumed that the fibres carrying these impulses form a continuous path, but this may not be so, and the fibres may be interrupted in nuclei in the pons and the impulses carried by a new tract. An alternative explanation is that the fibres of the spinothalamic tracts intermingle with those of the mesial fillet so completely that the exact course of the degenerated fibres cannot be distinguished.

Discussion

Although the general symptomatology of occlusion of the posterior inferior cerebellar artery is now familiar, yet there are many variations in detail in the various cases reported. No doubt, as Stopford has shown, the actual area supplied by this artery varies considerably in different persons. Whilst this is sufficient in some cases to explain the atypical pictures, it must not be forgotten that a large number of the recorded cases have not been confirmed by post-mortem examination, and the actual proof that this branch alone was involved is not forthcoming.

As Stopford says: "Most of the recorders of cases maintain that the symptoms of posterior inferior cerebellar occlusion are extremely constant. Neither careful study of the reported examples nor the anatomical distribution supports this."

Before discussing the atypical symptoms in the present case it may be said that the initial symptoms of vertigo, due to involvement of the restiform body, and of dysphagia, due to involvement of the nucleus ambiguus, could be accounted for by the lesion found in the medulla (Fig. 3). There is no record of any laryngeal examination, but as the nucleus ambiguus was included in the affected area a vocal cord paralysis had probably occurred.

The horizontal extent of the lesion is somewhat smaller than usual. This corresponds with the comparatively small size of the vessel itself. It also explains why there was no sensory change on the homolateral side of the face, the spinal tract and nucleus of the left fifth having escaped owing to the restricted area in the horizontal plane of the posterior inferior cerebellar supply. Below the level of the middle of the restiform bodies the area of degeneration was extremely small. Fig. 2 contrasts very markedly with the wide area of degeneration at the same level in the medulla in R. M. Stewart's case (photomicrographs illustrated in Stopford's paper, 1916–17). In the present instance the area of degeneration reached its maximum from the level of the middle of the

restiform bodies to the junction of the medulla and pons (Figs. 3, 4, and 5), and diminished very rapidly in the pons. A considerable part, if not all, of the degenerated fibres in the pons may be assumed to be due to an ascending degeneration rather than a primary lesion there. In Stewart's case no illustrations are given of the brain stem above the level of the medulla.

THE PATHS OF SENSORY CONDUCTION IN THE CORD AND BRAIN STEM

It is generally held that all pain and temperature sensations cross in the cord and travel up it in the nucleus gracilis and nucleus cuneatus in the medulla, pass upwards in the mesial fillet of the opposite side. Foerster, however, regards the posterior columns of the cord as of equal importance with the opposite antero-lateral columns in carrying touch and also pressure sensations. A reconciliation between these two views may be possible in that there may be variations in different individuals in this respect.

The course in the medulla of tactile sensations is not accurately known, but it is generally believed with Déjerine that the ventral spinothalamic tract joins the mesial fillet, while the tract carrying pain and temperature sensations (lateral spinothalamic

FIG. 2. FIG. 3. FIG. 4.

FIG. 5. FIG. 6. FIG. 7.

FIGS. 2–7.—Weigert-Pal preparations of medulla and pons. (× about 2.)

FIG. 2.—Medulla about the middle of the olivary body. Area of degeneration (within dotted lines). In this is situated the anterior cerebellar tract.

FIG. 3.—Medulla. Higher level than Fig. 2. A and B areas of degeneration (within dotted lines). A contains the anterior cerebellar tract. B contains the nucleus ambiguus, and corresponds to the area usually described as containing pain and temperature fibres (lateral spinothalamic tract). The mesial fillet is normal. Area B may therefore also contain touch fibres (ventral spinothalamic tract) in this case.

FIG. 4.—Junction of medulla and pons. Degenerated area (within dotted lines).

FIG. 5.—Pons just above junction with medulla. There is a partial degeneration mainly within the outlined area.

FIG. 6.—Pons. Higher level. There is some slight degeneration of fibres within the area outlined by dotted lines.

FIG. 7.—Pons. Higher level than (6). There is no difference discernible in the mesial fillet on the two sides and no obvious degeneration elsewhere.

spinothalamic tract of the opposite side: also that there is a double path for tactile impulses. There is, however, some divergence of opinion as to the kind and relative number of tactile impulses carried in the posterior columns. It seems probable that the majority of the touch fibres, after travelling upwards for some segments in the posterior columns of the same side, form relays in the grey matter of the posterior horn and cross to the opposite lateral column. The lateral path for touch (ventral spinothalamic tract) is distinct in the cord from that for pain and temperature (lateral spinothalamic tract).

According to Head and Thompson the impulses travelling uninterruptedly as far as the medulla in the posterior columns are sensory, from muscles, joints, and tendons, together with those subserving tactile discrimination. These, after relays in the tract) lies dorso-lateral to the inferior olivary nucleus. It must not be forgotten that this knowledge has been to some extent based upon a consideration of the dissociated loss of sensation in cases of posterior inferior cerebellar thrombosis, although in many of these cases the actual lesion has not been verified by histological examination.

In the pons the lateral spinothalamic tract joins the mesial fillet and occupies a lateral position. It is obvious, therefore, that a lesion in the pons would be very likely to affect all types of sensation in contrast to the dissociation of sensation that may occur with a lesion in the medulla.

Of the sensory impulses entering the trigeminal nerve there is some evidence that tactile impulses follow a central course distinct from that for pain and temperature (Stopford, 1925; Gerard). While

the former appear to pass upwards to the sensory nucleus in the pons, the latter pass downwards in the spinal tract of the fifth to end gradually in the spinal nucleus. Fibres originating in the latter nucleus cross at intervals to the opposite side, and ascend in part of the lateral spinothalamic tract.

According to some workers, however (Ranson), there is a probability that the central dissociation of impulses of touch, pain, and temperature entering by the trigeminal nerve is not always complete in that some tactile impulses may pass to the spinal nucleus. If the former view is correct, a lesion in the medulla would not cause any loss of touch over the face, although it would cause loss of pain and temperature on either side or both sides of the face. The second view, that there may be a variation in the amount of dissociation of fifth nerve impulses, would partly explain the partial loss of tactile sensation over the face in the present case.

There is a diversity of opinion about the position of fibres from the three divisions of the trigeminal in the spinal tract and nucleus (Stopford, 1925; Woods; and E. A. Carmichael, personal communication). Still less is known about the arrangement of the fibres carrying these impulses in the secondary neurones in the spinothalamic tract.

SENSORY CHANGES

The sensory changes may be considered under two headings: (1) distribution of sensory loss, and (2) nature of sensory loss.

(1) *Distribution.*—The area affected in our case extended over the whole of the right side as high as the lower part of the forehead. This is not the most common type of distribution of sensory loss in cases of posterior inferior cerebellar occlusion. Stopford (1925), in an analysis of 22 recorded cases, divided them according to the distribution of sensory loss into three groups.

In all cases the loss of sensation on the body and limbs is contralateral, whilst the distribution in the face differs in each. In Type 1 (16 cases) the face distribution is homolateral (sensory loss crossed). In Type 2 (4 cases) the face distribution is contralateral (sensory loss unilateral). In Type 3 (2 cases) the face distribution is bilateral (sensory loss crossed and unilateral).

In the distribution of sensory loss—viz., on the contralateral side of the face, trunk, and limbs—our case belongs to Stopford's Type 2. There is, however, a slight difference in that the area supplied by the ophthalmic division of the fifth had partly escaped, whereas apparently this was not so in the four cases reviewed by Stopford. Obviously the fibres of the secondary neurones carrying these impulses in the spinothalamic tract were not wholly included in the degenerated area. There does not seem to be any record of pathological investigations having been made in any of the four cases of Type 2, so that a comparison is not possible.

Nature of sensory loss.—In the loss of pain sense and incomplete loss to slighter degrees of temperature over the contralateral side the case coincides with those previously recorded. Indeed it is largely on the constancy of this finding that the recognition and localisation of a separate pathway for thermal and painful sensations in the medulla (lateral spinothalamic tract) has been based. In this case a lesion was found in the medulla occupying the area known as the spinothalamic tract, as was expected from the clinical data.

In the loss of light touch over the right face, trunk, and limbs our case differs from all that we have been able to trace. In almost all the cases of posterior inferior cerebellar occlusion hitherto described, whilst temperature and pain senses have, to varying extents, been lost, tactile sensation has been retained.

In only two out of the 22 cases collected by Stopford is there mention of any loss of tactile sensation, and then only in certain very limited areas.

When our patient first presented himself at hospital the history pointed so clearly to thrombosis of a posterior inferior cerebellar artery that the discovery of extensive loss of superficial tactile sensation came as a surprise and led to particular care in its investigation. Repeated examinations were made whilst he was an in-patient, and the possibility of suggestion or of wilful deception was carefully guarded against. He was a man of higher intelligence than the average and a skilled workman who had taken a prominent part in local affairs. He was also quite clear, mentally, at that time; the mental confusion which accompanied the onset of a fatal uræmia did not show itself until Feb. 4th—i.e., about a week after the findings were recorded. There is thus no doubt about the loss of light touch at the time he came into hospital. Whether this loss occurred at the time of the original attack, or if not when it did occur, it is, unfortunately, impossible to be quite sure. The information from various sources is somewhat conflicting and difficult to interpret.

His medical attendant in his original letter wrote: "When first I attended him I found him in bed suffering from loss of power on the right side of the body, with difficulty in walking and loss of cutaneous sensation on the same side, especially loss of heat sense."

The man himself, describing the original attack, stated that "he felt sick and dizzy and then suddenly lost the use of his right arm and leg. He could not feel the ground with his right foot and had loss of sensation in the whole of the right side." He was also quite constant in his statement that "the painful tingling feeling in the right side when exposed to hot or cold, and the pain on shaving the right side of the face, did not begin, or was not noticed, until six weeks after the original attack."

On the whole, the impression gained from the history is that sensory loss occurred at the time of the attack and certainly that the "uncomfortable sensations" were not noticed until a few weeks later. It would also seem probable that the motor loss on the right side was at first rather greater than the record indicates, and that there was then considerable loss of control (? hemiataxy) of that side, but it is noteworthy that he was able "to walk home with assistance."

A complete histological examination of the central nervous system has been made and shows a definite patch of necrosis in the area supplied by the left posterior inferior cerebellar artery. It is sharply defined, and instead of being larger is actually smaller than usual. No similar changes have been found in any other part of the brain stem, or in the optic thalamus, sufficient to explain the abnormal symptoms and signs.

The case of posterior inferior cerebellar thrombosis recorded by Bury and Stopford resembles ours in that there was also a partial "thalamic" syndrome present. We can quote other instances when this condition was associated with lesion in the brain stem rather than in the optic thalamus.

A girl of 19 (a patient in the Sheffield Royal Hospital) awoke one night with pain down the left side and loss of use. The pain continued after this attack. For some weeks also she complained of feeling cold on the left side as high as the shoulder. At the autopsy a tuberculoma, mainly in the right side of the pons, was found, a gelatinous cyst being present in the situation of the

mesial fillet at one level. No lesion was found in the optic thalamus.

Also in two cases of chronic epidemic encephalitis with a partial thalamic syndrome no definite lesion was discovered in the optic thalamus. (Cases 2 and 6, Eaves and Croll.)

It seems possible, therefore, that irritation of certain degenerating fibres in the brain stem may produce a "thalamic" syndrome.

Persistence of deep pain sensations.—Head and Holmes (*a*) are of the opinion that superficial and deep pain sensations, whilst all grouped in one tract in the cord, run along separate paths in the medulla. Their view was confirmed in our case. The man, while unable to feel painful cutaneous stimuli over the right side of the trunk and limbs, suffered great pain from the affected joints of the right arm and leg. Any movement, active or passive, increased the pain very much.

Posture sense intact.—Head and Holmes (*b*) described a case of posterior inferior cerebellar thrombosis in which postural recognition was impaired and spatial discrimination intact. They state that the impulses concerned with postural recognition separate from those for spatial discrimination at the posterior column nuclei. They may, therefore, be affected independently. In our case spatial discrimination could not be investigated owing to the loss of tactile sensation. Postural sense was, however, normal, and seeing that tactile sensation was lost it is clear that in this man tactile sensation and sense of position were running through the brain stem in different tracts.

Ataxia.—Although it is stated in the record that there was slight "ataxia of the right leg," yet there was none in the right arm. Seeing that during his stay in hospital this man was bedridden and that every movement of his right leg was made only with distress owing to the pain in the hip, the true value of this observation is difficult to assess. If it was really present it would be consistent with the findings in Bury and Stopford's case.

More important, however, is the absence in this case of any ataxy on the homolateral side, where it usually occurs in these cases. This, together with the absence of nystagmus (that is, the scarcity of cerebellar signs), is probably due to the area of the cerebellum supplied exclusively by the left posterior inferior cerebellar artery being smaller than normal owing to the small size of the vessel. This fits in with the smaller area of the medullary supply in this case, and the absence of sensory loss on the homolateral side of the face.

Astereognosis.—The fact that the man had complete loss of light touch in the right hand and also, when the examination was made, a painful swollen wrist, must be borne in mind in assessing the value of this observation.

Summary

(1) A case of left posterior cerebellar thrombosis is described, belonging, as regards distribution of sensory loss, to the less common type in which sensation is affected entirely on the side opposite to the lesion. (2) The loss of tactile sensation, as well as those of temperature and pain over the whole of the contralateral side, is in marked contrast to all previously recorded cases, in which the loss has been "dissociated" only. (3) The left posterior inferior cerebellar artery was smaller than usual; the left anterior inferior cerebellar artery was unusually large. (4) An area of degeneration corresponding to the distribution of the left posterior inferior artery was consistent with an occlusion of that vessel three months before death. It was smaller than usual. (5) No other appreciable area of degeneration was found in any part of the brain stem. (6) The degeneration of the spinothalamic tract could only be traced as far as the lower part of the pons. (7) It is suggested that in this man tactile impulses from the opposite side travelled through the medulla either with or closely adjacent to those of pain and temperature.

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PSYCHOSES IN CASES OF MALARIA FOLLOWING EXHIBITION OF ATEBRIN

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That certain toxic symptoms occasionally follow the exhibition of Atebrin in cases of malaria is now well established. Headache, epigastric pain of a colicky nature, and yellowing of the skin and scleræ, quite unrelated to jaundice, are usually encountered in a small percentage of treated cases. Another phenomenon, first reported by Dr. O. F. Conoley in a paper (unpublished) read by him in 1933, has been described as "cerebral excitation." This interesting complication was brought into prominence during a local discussion on the toxic effects associated with the use of atebrin, admirably opened by Green in December, 1933. During that discussion five cases of "cerebral excitation" (Green, Hoops, and Conoley) and also one case of intense mental depression (Quaife) and one of delusional insanity (Cameron) were described.

Early this year Dr. D. M. McSwan presented a short paper (unpublished) that included brief notes of three cases of "cerebral excitation" and two cases of mental confusion. One of the latter cases was transferred to a mental hospital; the second was discharged, but about three weeks later was also admitted for mental treatment. Since my return from furlough, early this year, some of my colleagues have kindly communicated to me particulars of further cases that had developed suggestive symptoms. The more typical ones are noted below.

CASE RECORDS

Case 1 (seen in consultation with Drs. W. T. Quaife, I. G. Cameron, and C. P. Allen).—A European rubber planter, aged about 35, had had an influenzal cold for a few days and on May 6th his temperature rose to 103° F.

The following day *Plasmodium vivax* was found in blood films—probably, as so frequently happens, the influenza had "lighted up" a latent malarial infection. Atebrin was prescribed and 2 tablets b.d. (1 tablet = 0·1 gramme) were taken on the 7th and 8th and 3 tablets on the morning of the 9th. That evening the patient was very depressed; there was an "impression of impending death." When seen by a doctor he was unable to protrude his tongue or to answer questions: he understood, but could not articulate. When the doctor continued to insist, the tongue was eventually put out and replies were forthcoming, but the patient's manner was curt and gruff, markedly at variance with his usual courteous attitude. On admission to hospital he had two hours' sound sleep following a sleeping draught and on waking was apparently normal.

When seen by me on the following morning he had quite regained his mental equilibrium. He emphasised his distress of the previous evening, stating that he had felt "as though a large part of his brain was out of action and only a small part was working. There had seemed to be so many important things to remember that had just eluded him." His memory for recent and distant events was then excellent, and reflexes were normal. There was no fever, but the pulse-rate, which at rest was 60, accelerated to 75 when the patient was talking. The blood pressure (estimated digitally) appeared to be within normal limits.

Examination of the urine indicated that atebrin was being freely excreted. Quinine was prescribed and five days later he was discharged from hospital. He took quinine grs. 30 daily for four days, followed by grs. 25 for six days. The after-history has been kindly communicated to me by Dr. Quaife.

On June 13th there was a relapse of the malaria, and quinine in the above dosage was taken for ten days. On July 10th a further relapse occurred; again the ten-day course of quinine was repeated. Still another relapse occurred on August 1st, when the temperature was raised for three days. Quinine was prescribed, but after two days the patient, in desperation, omitted the quinine, substituting atebrin in the following daily doses—3, 3, 3, 2, 2, and 2 tablets. There were no ill-effects. From August 8th for eight days there was a slight midday rise in temperature (99·6° F.) but no parasites were found in the blood films, and up to the present (end of September) no further relapse has occurred. Though it is possible that one or more of these "relapses" may have been reinfections, this is not regarded as probable.

The notes of this case have been discussed with Dr. J. W. Murdoch, superintendent of the Central Mental Hospital, who is of the opinion that the combination of influenza, in itself a powerful disturber of emotional balance, and malaria may have been enough to bring on symptoms of acute mental unbalance. Atebrin may also have been an auxiliary factor.

CASE 2 (Notes communicated by Dr. W. R. Duff).—A female Tamil labourer, aged 18 years, was admitted to hospital on June 13th after four days fever due to a mixed benign and malignant tertian infection. One tablet of atebrin t.d.s. was given from the 14th to the 18th inclusive. During the evening of the 19th—i.e., 24 hours after the completion of treatment—she behaved as though she was intoxicated, going from bed to bed in the hospital and using lewd and abusive language. Her parents were summoned and in their company she passed a fairly quiet night. The following morning she was quite normal and had no recollection of her behaviour of the previous evening.

CASE 3 (Notes communicated by Dr. Duff).—A male Tamil labourer was admitted to hospital on Jan. 3rd. The first two blood examinations were negative, but on the 7th *P. vivax* was found. Treatment consisted of one tablet of atebrin t.d.s. for five days, and the patient was discharged on the evening of the 11th. He was readmitted on the 22nd; during the previous week he had been very depressed, refusing to talk or to take his food and had been unable to sleep. Under treatment with bromide he slept well on the first night after readmission and made an uneventful recovery.

CASE 4 (Notes communicated by Dr. Duff).—A female European child aged 3½ years had had, in May, 1932, a benign tertian infection that was treated with Euquinine grs. 5 with sod. bicarb. t.d.s. for two weeks; b.d. for a further two weeks, and then daily for two months. There had been a slight rise of temperature on the second day of treatment, after which symptoms had abated and subsequently her health had been good. In November, 1932, there was a relapse (relapse is more probable than reinfection because other cases were not occurring at the time in the vicinity, and she had not spent more than a few hours away from home since the first attack). Atebrin gr. ¼ t.d.s. was given for five days and after an interval of three days the course was repeated. Marked yellowing of the skin developed which was noticeable for a fortnight. Three weeks after the termination of these courses there was a second relapse, and atebrin gr. ¼ t.d.s. was given for seven days. Yellowing of the skin again occurred but, in addition, the child developed an unusual and troublesome timidity (quite foreign to her usual nature) that lasted for about a month. A few weeks later symptoms of still another relapse developed. A combination of atebrin, Plasmoquine, and Esanophele was employed for treatment without the supervention of any toxic symptoms. There has been no further relapse.

CASE 5 (Notes communicated by Drs. A. K. Cosgrave, Murdoch and W. S. Leicester).—Early in October a male Singhalese clerk to a rubber plantation contracted malaria (type unknown) and was given 1 tablet of atebrin t.d.s. for five days. After three days of treatment he returned to work at his own request. Two days later—i.e., on the fifth day of treatment—he complained of visual hallucinations and was sent to hospital for observation (Oct. 10th). Shortly after admission the patient absconded and a few hours later was arrested for a sexual offence. He was returned to hospital and on the following day appeared rational though melancholic, but during the night he he became troublesome, talked irrationally, assaulted the watchman, and attempted to abscond. The next day he was abusive and noisy, asserting that he was the Almighty. On the 19th he was sent to a mental hospital for observation. There the patient was found to be mentally dull but otherwise normal, and discharge was possible on the 24th. He returned to his work on the plantation, where for a few days he "saw pictures everywhere."

CASE 6.—This case has been briefly recorded by Dr. I. G. Cameron (see above). It has, however, been possible to obtain more extensive notes from others, through whose hands she also passed (Drs. W. H. Hart, A. G. H. Smart, W. J. E. Phillips, and P. D. Johnson). A female Anglo-Malay, aged 30, married, had had malaria some years previously. She was admitted to hospital on May 9th, 1933, with a malignant tertian infection of a few days' duration. Quinine in capsules had been taken for three days but there had been vomiting. From the 10th to the 13th inclusive one tablet of atebrin t.d.s. was given. The temperature fell to normal on the 11th. On the 13th she was restless, somewhat strange in manner, and talked irrationally. The next day there was little change, but on the 14th, though her manner was still strange, she insisted on discharge.

She travelled to another town where she had friends, who called in a doctor; thereupon she proceeded to strip herself "so that she could be examined." On admission to a second hospital (May 15th) she was found to be very excitable but not physically ill. On the 17th she was irritable, excitable, irrational, and dirty in her habits. During the evening of the 18th she was highly excited, violent, and uncontrollable. Three days later there was marked depression followed by another period of violence. On May 24th she was sent to a mental hospital. There was a history of mental derangement about eight years earlier.

AN ANALYSIS

The cases of which sufficient data are available have been subject to analysis: again acknowledgment must be made to Dr. McSwan and other colleagues for kindly placing their notes at my disposal. Two groups have been differentiated: (1) those exhibiting

mild and transient psychoses, and (2) those presenting such serious symptoms that special mental care was necessary. Doubtful cases have been excluded—e.g., Case 1, where influenza may have been the actuating factor, and Case 4, in which the symptoms were perhaps somewhat indefinite.

Mild psychoses.—Records are available of eight cases, seven of which were of Tamil and one of Chinese nationality; three were females and five were males, and all were young adults.

Four cases were infected with *P. vivax*—two with *P. falciparum* and two with both *P. vivax* and *P. falciparum*. In the benign tertian sub-group the onset of symptoms was noted [1] after 6 tablets (one case), 8 tablets (one case), and 15 tablets (two cases), while the interval between the commencement of treatment and the appearance of symptoms was respectively 1½ days, 2½ days, 5 days,[2] and 9 days—i.e., 4 days after the completion of the course of atebrin. The duration of symptoms was ½ day, 1 day, 2 days, and 7 days respectively. Both the subtertian cases developed symptoms after 21 tablets, one 7 days after the commencement of treatment; the second 5 days after the completion of a 7-day course. The duration of symptoms was ½ day and 1 day. With the "mixed" benign and subtertian cases, symptoms appeared after 8 and 15 tablets, 2½ and 6 days after the commencement of a 5-day course. The symptoms lasted for 1 and 1½ days, respectively.

More serious psychoses.—Four cases have been noted: two were Chinese, one Singhalese, and one Eurasian; three were female and one male, and again all were young adults. Two were infected with *P. vivax*, one with *P. falciparum*, and in one case the type of parasite was not diagnosed. Both the benign tertian cases developed symptoms after 12 tablets, and the interval from the commencement of treatment was four days. In one instance symptoms disappeared and the patient was discharged from hospital, but three weeks later was admitted for mental care. The second case [3] was transferred directly from a general to a mental hospital. Symptoms appeared in the subtertian case [4] after 9 tablets, three days after the commencement of the course. The psychosis had continued for 13 days before the patient was transferred to a mental hospital. In the case where the type of infecting parasite is unknown, symptoms developed after 15 tablets, five days after the commencement of treatment. Four days later the patient was referred to a mental hospital for observation but was discharged after a stay of a few days.

COMMENTARY

These instances of psychoses occurred among several thousand cases that have been treated with atebrin. The actual incidence is therefore low and it would appear that predisposition plays an important rôle. Of the 12 mild and severe cases analysed, two had a history of previous mental derangement and a third had a bad family history. But the complication may be attended with such grave consequences that any light dismissal cannot be entertained.

There are three possible explanations of the phenomenon: (1) cases of mental unbalance following untreated or quinine-treated malaria are occasionally reported; (2) the action of atebrin may bring about an increased liberation of malarial "toxins"; and (3) atebrin itself may be the toxic agent that determines the attack.

(1) Psychical change following malarial infection may result from anæmia, ischæmia, and perhaps "toxæmia." Such symptoms as restlessness, dullness, apathy, depression, anxiety, loss of memory, insomnia and hallucinations have been described. Sometimes the abnormality is transient but occasionally its duration is prolonged. Porot and Gutmann, quoted by James, found that a primary state of confusion may become chronic and sometimes passes to catatonic dementia; that cases exhibiting persistent hallucinations may become chronic delirious subjects and that malaria may set in motion a latent constitutional taint of insanity.

Anderson is of the opinion that confusion is the commonest single feature of malarial psychosis. He states that:

> "The commonest form of confusion occurs during the febrile attack .... It is a kind of mild delirium, without total loss of consciousness and is often accompanied by fleeting hallucinations of sight and hearing. The patient talks quietly at intervals to himself, or chatters incoherently and constantly, sometimes getting out of bed and wandering around quietly .... A severer form of the same thing is where the patient is rather more confused, agitated or hallucinated. He appears to be living in a dream ... and sometimes becomes violent, argumentative, impulsive or ill-tempered. .... If ... addressed in an ordinary voice he may not respond .... If addressed more energetically ... he answers perhaps correctly .... The conduct and talk of a patient while in this state may closely resemble drunkenness .... Confusion of this kind may last only a few hours, or a day .... The more chronic forms ... occur generally during the afebrile periods."

In Malaya, though cerebral malaria due to *P. falciparum* infection is occasionally seen, psychoses following malaria have been, in the past, a very unusual complication. Further, only a small number of cases invalided for "neurasthenia" give a history of malarial fever.

(2) When cases are treated with atebrin, trophozoites persist, on the average, for a shorter time in the peripheral blood than when treated with quinine, though the degree of fever during the first 36 hours of treatment often remains higher in atebrin-treated subtertian cases (Green). Early in the therapeutics of atebrin observers noted that, during the first day or two of treatment, cases with heavy infections (particularly of *P. falciparum*) not infrequently complained of an intensification of symptoms. There is thus indication that in atebrin-treated cases the rate of decrease in parasite density is more rapid, and a hypothesis is ventured that a more intense liberation of "toxins" occurs. The resulting increased concentration of malarial "toxins" may, in some instances, be the cause of the psychosis. This suggestion is less easily tenable when there has been a low intensity of malarial infection (unless an unusually "toxic" strain is postulated) or when the onset of the psychosis is considerably delayed.

(3) With regard to the possible direct action of atebrin on the central nervous system, Hecht's experiments are of interest. Following lethal doses of atebrin to animals, that worker recorded evidence of stimulation of the central nervous system, including the cerebrum. As Green states, however, the therapeutic is far removed from the lethal dose, though perhaps an occasional individual may be unusually susceptible to this action.

It is thus probable that the psychoses may be caused by an intense liberation of malarial "toxins" or by the direct toxic action of atebrin. In either case

[1] This case had a history of previous mental derangement.
[2] This case had a history of previous mental derangement.
[3] The mother of this patient had been an inmate of a mental hospital.
[4] This case had a history of previous mental derangement.

the risk of these sequelæ could be minimised by caution in the selection of the daily dose.

SUMMARY

1. Seven cases of psychosis following the exhibition of atebrin to cases of malaria have been collected. Five previously unpublished cases (McSwan) have been cited and five more cases are recorded. These occurred among several thousand cases of malaria treated with atebrin.

2. Psychoses may occur in either sex and have occurred in five nationalities. Symptoms have developed in benign and subtertian cases and in cases with mixed infections. The complication has been noted after a minimum of 6 tablets (1 tablet t.d.s., i.e., 0·3 g. daily), a maximum of 21 tablets and an average of 13 tablets. The minimum interval between the commencement of treatment and the onset of symptoms was 1½ days, the maximum 12 days (5 days after the completion of the course) and the average 5½ days.

3. The duration of symptoms in eight mild cases varied from ½ to 7 days, with an average of 1½ days. Four more severe cases were referred to mental hospitals.

4. One mild and one severe case had histories of previous mental breakdown. Another severe case had a bad family history.

5. Two factors may be involved in the causation. The action of atebrin vis à vis the malarial parasite may result in an intense liberation of "toxins": on the other hand, atebrin (in lethal dosage) is known to have a toxic action on the central nervous system.

6. Although the plasmodicidal effect of atebrin in a daily dosage of 0·2 g. is less favourable than that obtained with a larger intake, it is suggested that the risk of the development of psychoses would be minimised by caution in the selection of the daily dose.

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SILICOSIS AND MALIGNANT DISEASE

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In a disease such as silicosis, in which chronic irritation of long duration is an outstanding feature, which is characterised by the long-continued presence in the body of a substance capable of slow solution and which in its colloidal or dissolved forms is able to produce toxic, necrotic, and proliferative lesions, an association with malignant disease might well be expected. This, however, does not seem to be at all a common finding, if we except the notorious lung cancer of the Schneeberg and Joachimstal miners, which is usually regarded as a special condition local to those districts and the causation of which is, though not understood, commonly attributed to the special nature of the dust inhaled. The high arsenical content of the Schneeberg minerals has been suggested as a local factor but, in addition, sulphur, nickel, and cobalt are present. Radium emanation is found in this district, as also in Joachimstal where uranium is mined, and in some quarters opinion has tended towards regarding the irradiation as the exciting agent.[1 2 3] Schmorl,[4] in his work upon the Schneeberg cancer, has drawn attention to the coexistence of an "anthraco-chalicosis" in these cases, but, whilst considering that this may be a factor in the development of bronchial carcinoma, doubts its primary importance, since the lung cancer so frequent in Schneeberg is not found in other districts where pneumoconiosis is common. It may be noted that Schmorl found more than one primary growth to be present in the lung in a large proportion of his subjects.

The occurrence of three cases of malignant disease in 14 post-mortem examinations made upon persons suffering from silicosis in East Lancashire since 1930 seems worthy of record for the purpose of directing more attention to the possible presence of an ætiological factor in the material causing the pneumoconiosis. It is further remarkable that in two of the cases to be cited two independent malignant growths of different types were present: in one instance lung and colon were involved and, in the second, bile-duct and prostate. A case of myeloid leukæmia, in a subject who was suffering from advanced silicosis, is also included since there are many reasons for regarding this disease as an example of malignant neoplasm.

Case 1.—Female aged about 50. Employed in a soap-works engaged in the manufacture of an abrasive soap powder. Both lungs showed well-marked diffuse silicosis with the production in places of areas of dense leathery fibrosis. The other organs showed the changes of myeloid leukæmia with multiple small ecchymoses under the pericardium and in the cerebral meninges and typical alterations in blood, spleen, and bone-marrow. The microscopical picture in the lungs was that of advanced silicosis without tuberculosis.

Case 2.—Male aged 58. Employed all his life as a stone-mason. Ceased work five months before death. At post-mortem advanced silicosis was present, both lungs being riddled with typical nodules. On the right side there was, in addition, more advanced and generalised fibrosis with exceedingly dense fibrous thickening of the pleura over the base, this being in places nearly 2 in. in thickness. Microscopical examination showed the presence of silicosis in the juxta-pulmonary portion of the thickened pleura and some necrosis in the deeper portions of the fibrous mass. The diaphragm was firmly welded to the under aspect of the lung and adhered also to the upper surface of the right lobe of the liver. In this situation in the latter organ there was a tumour about the size of an orange. A small satellite secondary growth was situated nearby. The tumour had the histological characters of a bile-duct carcinoma. The subhepatic lymph glands showed silicotic changes and carcinomatous invasion. The lumbar and iliac glands showed silicotic changes only. The prostate was enlarged, and on microscopical examination showed an early malignant growth; this was histologically an undifferentiated spheroidal-cell carcinoma of a different type to that in the liver. Histological examination of the lungs showed typical silicosis without tuberculosis.

Case 3.—Male aged 57. Stonemason by trade. Ceased work a year before death. At post-mortem examination typical nodular silicosis was present in both lungs and, in addition, a large tuberculous cavity was found in the upper lobe of the left lung. A discrete mass of tumour growth, about the size of a walnut, was present in the lower lobe of the right lung and a separate smaller mass in the upper lobe near the root. The bronchial glands showed silicotic and tuberculous disease. The upper abdominal lymph glands showed silicosis. The other organs call for no comment with the exception of the pelvic colon which showed an early malignant growth,

limited to the mucosa and about the size of a florin, situated a foot above the anal orifice. A large secondary growth was present in the left lobe of the cerebellum practically destroying it. Histologically the lung growths were oat-cell carcinomata as was also the secondary growth in the brain. The tumour in the colon was a columnar-cell carcinoma.

CASE 4.—Male aged 49. Stonemason by trade. Had been suffering from chest trouble for six to seven years. Admitted to hospital with acute respiratory disease. Post-mortem examination showed advanced nodular silicosis of the right lung and in addition a tumour about the size of an orange in the hilum of the right lower lobe; this had traversed the pleura, which was adherent, and invaded the tissues on the right side of the vertebral column. The left lung showed a similar silicotic condition to the right and, in addition, early acute lobar pneumonia which was the immediate cause of death. The sub-hepatic and lumbar glands were silicotic. The spleen contained multiple nodules of secondary growth. The brain showed a large mass of secondary carcinoma on the outer side of the left lobe of the cerebellum and smaller nodules in the head of the right caudate nucleus and in the subcortical white matter of the middle gyrus of the left temporal lobe. The structure of the tumour and of its metastases was that of an anaplastic lung carcinoma. The lungs did not show tuberculosis.

The connexion between the malignant disease and the silicotic condition would seem clearly indicated in the two cases of pulmonary carcinoma, and also in the case of bile-duct carcinoma, where the tumour originated in an area of liver adherent to the diaphragm, which in its turn was bound by a greatly thickened pleura to the base of a lung affected with advanced silicosis. The existence of a second and independent tumour in two cases may be variously interpreted, but is at least compatible with the theory of the existence of a diffusible carcinogenic agent. The fact that tuberculosis was only detected in one of these cases would tend to suggest that a degree of resistance to this disease, perhaps unusually well developed, may have permitted an exceptionally prolonged exposure of the tissues to the irritant agent.

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IMMUNISATION AGAINST YELLOW FEVER WITH ATTENUATED NEUROTROPIC VIRUS

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IMMUNISATION against yellow fever is by no means new, for it was attempted more than 40 years ago by Carlos Juan Finlay (1894), though only during the past few years has it been possible to place it on a scientific basis of facts. The discovery by Stokes, Bauer, and Hudson (1928) that yellow fever can be transmitted to rhesus monkeys was quickly followed by the preparation of vaccines from the tissues of infected animals. Hindle (1928) was the first to prepare such a vaccine by the action of either phenol or formol on an emulsion of liver from rhesus monkeys infected with yellow fever. Various vaccines of similar type in which the virus is attenuated by physical or chemical agents were also tested, one such being injected into more than 25,000 persons in Brazil during an epidemic in Rio de Janeiro. The results were however irregular (Chagas, 1931). The explanation of these uncertain results is to be found in experiments such as those carried out by Davis (1931), who, using a chloroformed vaccine, found that it either failed to immunise monkeys or else infected them with yellow fever. Okell (1930) also showed that the antigenic capacity of such vaccines was quickly lost, probably as a result of the death of the virus; in addition, so long as the vaccine contained living virus there was always the possibility that virus might appear in the peripheral circulation with consequent possibility of infection of the mosquito vector. Various attempts were also made to vaccinate monkeys with mixtures of virus and immune yellow fever serum, but before such a method could be standardised interest turned on the production of a biologically modified yellow fever virus.

IMMUNISATION WITH NEUROTROPIC VIRUS

In 1930 Max Theiler discovered that yellow fever could be transmitted to mice by intracerebral inoculation. Mice thus inoculated did not develop viscerotropic lesions similar to those found in rhesus monkeys and man, but died from a meningo-encephalitis; while after serial passage in mouse brains the virus lost its power to produce viscerotropic lesions on subcutaneous inoculation into monkeys, though on intracerebral inoculation it set up a meningo-encephalitis. The use of this fixed neurotropic virus for immunisation against yellow fever in man appeared to solve many of the difficulties associated with injection of the ordinary or viscerotropic virus.

As in the case of the viscerotropic yellow fever virus two methods of immunisation have been employed. In the first the inoculation of neurotropic virus, titrated for its potency in mouse brains, is combined with the use of immune yellow fever serum, also titrated before use; in the second, attenuated neurotropic virus has been injected alone. The first method was initiated by Sawyer, Kitchen, and Lloyd in 1931; since then Sawyer (1934) has given details of 56 persons immunised in this way in New York. It has also been used in London by Findlay (1934), who has tested out various combinations of virus and immune serum, and in Paris by Pettit and Stéfanopoulo (1934), who in place of human immune serum have employed a high titre immune yellow fever serum prepared in animals. Just over 400 persons have now been immunised with combinations of neurotropic yellow fever virus and immune serum, the object of the immune serum being to decrease the possibility of reactions and more especially to eliminate the possibility of active virus circulating in the peripheral blood stream.

IMMUNISATION WITH ATTENUATED NEUROTROPIC VIRUS

In 1932 Sellards and Laigret reported on the vaccination of six persons with dilutions of mouse-fixed living virus. Reactions were slight or entirely insignificant. In seven other cases subsequently vaccinated in this manner there were in three cases severe reactions after incubation periods of from 13 to 15 days (Laigret, 1933). In one there was fever of 4 days' duration with slight albuminura, in the others the illness lasted for from 8 to 10 days with albuminuria, icterus, well-marked nervous symptoms, and hæmorrhagic sputum. Later Laigret (1933 and 1934[a]) proposed the use of three injections at

intervals of 20 days of infected mouse brains which had been attenuated for periods of from 1 to 4 days at a temperature of 20° C. In a recent communication (1934[b]) he has recorded the results of vaccinating by this method more than 3000 persons, chiefly Europeans, in French West Africa. In about a third of the cases a reaction occurred, commonly after the first inoculation, more rarely after the second, and exceptionally after the third, consisting of fever and occasionally albuminuria. Two persons developed nervous symptoms, one a meningitis, the other a myelitis with transitory paraplegia.

EXPERIMENTS ON MONKEYS WITH ATTENUATED VIRUS

The results obtained by Laigret are of great importance, since by the elimination of the use of immune serum the technique of immunisation is greatly simplified. Before, however, applying this method to the vaccination of human beings, experiments were carried out in rhesus monkeys to determine whether virus circulated in the blood stream, more especially after the first inoculation of the infected mouse brain, attenuated by an exposure of 4 days at 20° C. The exact technique by which the mouse brains are attenuated and titrated was carefully followed.

The brains of the infected mice were first attenuated by exposure for 4 days, 2 days, and 1 day to a temperature of 20° C. in the same way as is used for the spinal cords of rabid rabbits. By this means vaccines of 4 days, 2 days, and 1 day were obtained. The brains were reduced to a dry powder and kept in ampoules deprived of air. Before being used for human inoculation the brains of the three lots of mice are made up in suspensions of 1 in 100, 1 in 1000, and 1 in 10,000, and inoculated into the brains of mice. None of the mice inoculated with dilutions of the 4 days' brains should die, but with dilutions of the 2 days' brains, mice inoculated with the dilution 1 in 100 die, while with the 1 day's brains the mice inoculated with the dilution 1 in 100 and 1 in 1000 die, but not those inoculated with the dilution 1 in 10,000. The mice are observed for 15 days. The first inoculation into man consists of 1 c.cm. of a 1 in 100 suspension of the 4 days' brain, 20 days later 1 c.cm. of a 1 in 100 suspension of the 2 days' brain is injected, and after another interval of 20 days 1 c.cm. of a 1 in 100 suspension of the 1 day's brain.

It was found that by following the above technique it was not difficult to obtain brains which gave the correct degree of attenuation when the inoculated mice were observed for 15 days, though it was frequently noted that when the mice were kept under observation for as long as 28 days occasional mice died with encephalitis, even after inoculation with brains attenuated for four days, in from 16 to 23 days. This prolonged incubation period in mice has often been observed where the inoculum contains small amounts of living virus.

Having obtained mouse brains of the correct degree of attenuation 6 rhesus monkeys, weighing between 2½ and 3 kg., were inoculated subcutaneously with 1 c.cm. of a 1 in 100 dilution of the 4 days' vaccine, each monkey receiving a different mouse brain. The temperatures of the monkeys were recorded and, in order to test for the presence of virus in the blood, at intervals of 48 hours blood was removed from the heart and inoculated intracerebrally into mice. At the end of 20 days the monkeys' blood was tested for the presence of immune bodies, while the second injection—1 c.cm. of a 1 in 100 dilution of the 2 days' vaccine—was injected subcutaneously. The results are shown in the following Table.

It will be seen that monkeys 1, 2, 4, and 5 showed the presence of virus in the blood in from 2 to 8 days after inoculation: these monkeys had developed immunity 20 days after inoculation, and on injection with mouse brains attenuated for 2 days they did not again show circulating virus in the blood stream. Monkey 1 had a febrile reaction on the fifth, sixth, and seventh days after inoculation, monkey 2 on the fifth and sixth days, the others had no significant rise in temperature. Monkeys 3 and 6, which failed to show the presence of virus in the blood stream, also failed to develop immunity. On receiving the second inoculation, which as shown by its action on mice contains living virus, both monkeys 3 and 6 showed the presence of virus in the blood stream, and subsequently became immune.

Monkey.	Presence of virus in peripheral blood stream after inoculation (as shown by intracerebral inoculation of mice). Days.									Immunity 20 days after inoculation.	
	2	4	6	8	10	12	14	16	18		
1	+	+	+	−	−	−	−	−	−	+	+
2	−	+	+	−	−	−	−	−	−	+	+
3	−	−	−	−	−	−	−	−	−	−	−
4	+	+	+	+	−	−	−	−	−	+	+
5	−	+	+	−	−	−	−	−	−	+	+
6	−	−	−	−	−	−	−	−	−	−	−

Since it might be argued that the first injection of 1 c.cm. of 4 days' vaccine was the dose for an adult human being and not for a rhesus monkey, 4 further monkeys were inoculated subcutaneously with 0·5 c.cm. of the 4 days' vaccine. The results were the same, however; in three monkeys virus was present in the blood stream by the fourth day, and in one it failed to appear in the blood. This monkey was not immune at the end of 20 days. Monkey 8, which showed the presence of virus 4 and 6 but not 8 days after inoculation, is of particular interest, for 12 days after injection it developed weakness of the hind limbs and grinding of the teeth; 24 hours later it was killed with encephalitis and virus was found in large quantities in the brain.

From these experiments on monkeys it is seen that the development of immunity is correlated with the presence of virus circulating in the blood stream, for when no virus circulates immunity fails to develop. These results with brains attenuated by exposure at 20° C. are thus entirely similar to those obtained by attempting to attenuate the neurotropic virus by exposure to a pointolite in the presence of methylene-blue (Findlay, 1934), where also complete loss of pathogenicity is accompanied by a complete loss of antigenic capacity. The experiments on monkeys thus suggest that in human beings inoculated with virus attenuated by exposure at 20° C. development of immunity is correlated with circulation of virus in the blood.

DISCUSSION

The presence of active neurotropic yellow fever virus circulating in the blood stream during the course of immunisation renders the individual concerned a potential danger both to himself and to the community if any of the known mosquito vectors of yellow fever are present.

Although Mathis, Laigret, and Durieux (1934) state that their mass experiments in West Africa were not followed by any epidemic outbreak, this does not alter the fact that, as shown by the experiments of Davis, Lloyd, and Frobisher (1932), and of Roubaud and Stéfanopoulo (1933), *Aëdes ægypti* is capable of taking up the neurotropic virus from the blood stream of monkeys and retransmitting it to

other animals. Davis (1934) has recently shown that at each bite the stegomyia mosquito injects approximately 100 times the infective dose for the mouse.

The chief personal danger to which a person with active circulating neurotropic virus is exposed is that the barrier between the blood stream and the brain may be broken down and the central nervous system may be invaded by the virus. This appears to have occurred in two cases reported by Laigret (1934[b]); it certainly occurred in one of the monkeys inoculated in the course of the present investigation. Davis, Lloyd, and Frobisher (1932) also record the case of a monkey which developed encephalitis following the bite of a mosquito infected with the neurotropic virus. Occasionally also mice and guinea-pigs inoculated intraperitoneally with neurotropic virus have developed encephalitis in the absence of any known cerebral trauma. The barriers between the blood and the brain cannot therefore be regarded as always impermeable to the neurotropic yellow fever virus.

A second danger which cannot be entirely excluded is that the neurotropic strain may suddenly revert to the viscerotropic virus. In man, following the inoculation of neurotropic virus, leucopenia and bradycardia are common, while symptoms such as albuminuria and jaundice have also been recorded, and in hedgehogs Findlay and Clarke (1934) have shown that subcutaneous inoculation of neurotropic virus is capable of producing lesions in the liver and stomach similar though rather less in degree than those produced by the viscerotropic virus. The neurotropic virus should in fact be regarded as pantropic rather than strictly neurotropic.

CONCLUSIONS

(1) Experiments are recorded on the immunisation of rhesus monkeys against yellow fever by Laigret's method, which involves attenuation of the virus by exposure for varying periods at 20° C. (2) The development of immunity appears to be correlated with the circulation of living neurotropic virus in the peripheral blood stream. (3) One of the monkeys developed encephalitis after an injection of supposedly attenuated virus. (4) In view of the danger attendant on the circulation of active neurotropic virus in the blood stream this method is not recommended for human immunisation.

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THE HÆMOSTATIC POSSIBILITIES OF SNAKE-VENOM

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During an investigation by one of us (R. G. M.) of normal and hæmophilic blood coagulation a suggestion was made by Prof. H. Hartridge to the effect that the coagulants known to exist in certain snake-venoms might be of value in the treatment of hæmophilic hæmorrhage. Acting on this suggestion we proceeded to examine the action of various snake-venoms on hæmophilic blood and to study them with a view to the production of a hæmostatic agent. The work, of which this is a preliminary report, was carried out mainly at St. Bartholomew's Hospital and partly in the laboratories of the Zoological Society of London.

Considerable work has previously been done on the coagulant action of snake-venoms on normal blood in vivo and on citrated plasma in vitro. But so far as we are aware the action on hæmophilic blood has not previously been studied. In 1893 C. J. Martin[1] found that the venoms of certain snakes caused intravascular clotting. In 1903 G. Lamb[2] discovered that certain other venoms clotted citrated plasma. This work was followed up by further investigations by the same workers and by Sir T. R. Fraser, J. Mellanby (1905), and others. In 1933 H. F. Holden[3] claims to have eliminated the coagulant from the venom of certain Australian snakes by adsorption on to barium carbonate, but he does not appear to have isolated it in an active form.

TECHNIQUE

The materials needing description which were used in our work are (1) blood from hæmophilic patients, (2) dried snake-venoms, and (3) an apparatus to measure accurately the coagulation times of the blood.

The *hæmophilic blood* was obtained from the veins of three donors. In each case the diagnosis was fully established by family and personal histories and blood examinations over periods of several months. Their coagulation times varied between 17 and 35 minutes (normal = 3½ minutes by the method used).

The *snake-venoms* employed were obtained from nearly all the poisonous snakes available in the collection of the Zoological Society of London. The method of collecting venom was that commonly employed in antivenine institutes. The snakes were caused to bite through an oiled-silk membrane stretched over a glass container. After the initial flow of venom into the glass the poison glands and ducts of the snakes were manipulated to extract the residue. In this way the parotid secretion was collected in a pure state without admixture with other buccal secretion. The venom so collected was spread on glass plates and dried either spontaneously or over calcium chloride in a desiccator. The dried venom was then stored in the dark in glass tubes hermetically sealed with paraffin wax.

A *mechanical coagulometer* previously designed by one of us (R. G. M.) was employed. This will be more fully described in a later paper. In it the moment at which clotting occurs is determined by the failure of a nickel-silver sinker to move through a column of blood in a glass tube. The temperature is controlled thermostatically. The time taken by the blood to clot is measured by a stopwatch.

A POTENT COAGULANT OF HÆMOPHILIC BLOOD

The first work was to classify all the available venoms as coagulants or anticoagulants, and to measure the relative potency of the former. This was done by adding to ten drops of hæmophilic blood one drop of a 1 : 1000 solution of the venoms in the coagulometer and comparing the coagulation times so obtained with that of the untreated blood. It was found that neither coagulant nor anticoagulant action was common to any large zoological group of snakes. The only large genus in which the venoms were consistently coagulant was vipera. In allied genera the venoms of some quite nearly related species were opposite in action. In many cases the effect was slight and could probably not have been detected with normal blood.

The most striking results were obtained with the venom of an Indian snake, *Vipera russellii*. This, in the concentration stated above, clotted hæmophilic blood in 17 seconds when blood from the same patient clotted spontaneously in 35 minutes. It was found, moreover, that, once begun, the process of fibrin formation was completed very rapidly. The clot produced was tough and elastic, in marked contradistinction to the soft, slowly forming, ineffective clot characteristic of hæmophilia—a point of some clinical importance.

Flexner has stated [4] that this venom does not produce true fibrin clots, but only agglutination of corpuscles. It was found, however, that clear hæmophilic plasma coagulated with venom as firmly and rapidly as did the whole blood. It was therefore decided, for the time being, to continue the work with the venom of *Vipera russellii*.

As the work proceeded it became evident that the coagulant action of venoms on citrated blood was not a true index to their action on whole blood. Thus many venoms were found to clot citrated blood more rapidly than did Russell's viper venom, though their action was much slower on hæmophilic blood. As a coagulant of hæmophilic blood, Russell's viper venom was found to be by far the most powerful agent in our experience.

The effect of dilutions of the venom was then studied. The general conclusions from these experiments were that a dilution of 1 : 10,000, or even 1 : 100,000, provided a clotting time sufficiently short for practical purposes—e.g., about 60 seconds. The coagulant action was traceable in very much lower concentrations than this. It was not entirely lost till after a dilution of $1 : 10^{18}$ was reached.

Since Russell's viper venom contains powerful toxins apart from the coagulant it would obviously be desirable to isolate the latter were this practicable. So far we have not been successful in achieving this isolation. It was found, however, that the unwanted toxins were negligible when the venom was used in the dilution and conditions specified. The local effects were investigated by one of us (R. G. M.) by means of experiments on rabbits, guinea-pigs, and mice. These showed conclusively that injection of subminimal lethal doses of venom solution into the skin and subcutaneous tissues resulted in no hæmorrhages, œdema, ulcerations, or destruction of tissues, even in the concentration of 1 in 1000. The application of 1 per cent. venom solution to wounds did not lead to suppuration, or to delay in healing as compared with control animals. No damage to liver or kidneys of the animals could be found subsequently. It seems, in fact, that the unwanted toxins had been diluted out of practical importance. The human minimum lethal dose as estimated by Acton and Knowles [5] is 42 mg., and this would only be contained in several litres of the 1 : 100,000 solution.

STABILITY AND STERILITY

The *stability* of the coagulant was next considered. It was found that, generally speaking, it conformed to the known facts of the stability of viperine venom as a whole. That is to say, in the dry state its potency remains unimpaired at least for months, but in solution it deteriorates fairly rapidly. This deterioration is more rapid in weak solutions than in strong ones, and at high temperatures than at low ones. It is rapidly destroyed in the presence of carbon dioxide, a fact which has not, so far as we are aware, been hitherto observed. Even stored at 0° C. solutions are not entirely stable.

The effects of varying pH solutions and of possible preservatives in the diluent are being studied. No preservatives have been found effective with the possible exception of 0·5 per cent. phenol. This was surprising in view of C. J. Martin's finding [6] that venom was destroyed in solutions of phenol in 48 hours; but in any case the preservative action was too slight to be of practical value.

The question of the *sterility* of the venom solution is of some practical importance, since it was found, at least in the concentrations employed, that the venom had no inhibitory action on the growth of bacteria and moulds. Sterilisation by heat or by strong antiseptics destroyed its coagulant property. Passage through a Berkefeld filter No. 12 b V, however, did not appreciably influence its activity, and this method of sterilisation was adopted.

CLINICAL RESULTS

Not enough data have accumulated yet to allow of definite therapeutic claims, but such clinical trials as have been made are encouraging.

The cases which have received treatment by venom solutions will be described fully in subsequent papers. It is sufficient here to summarise them in three groups.

(1) In patients with normal blood the venom has been used successfully some 20 times as a hæmostatic application following dental extraction and tonsillectomy, and in two cases during abdominal operations to control capillary oozing.

(2) The venom has been used with success to stop hæmorrhage following dental extraction in three subjects with a hæmorrhagic diathesis of which no definite diagnosis was made.

(3) Finally, in genuine hæmophilic subjects it has been used most effectively following dental extractions (two cases), to control epistaxis (one case), and to control hæmorrhage from wounds (one case). In the cases of dental extraction an operation was deliberately performed which would have been considered highly dangerous in view of the patients' prolonged coagulation times in the absence of a hæmostatic.

In all these cases complete hæmostasis was secured almost immediately by the local application of sterile 1 : 10,000 venom solution. In none of them was there any ill-effect attributable to its use.

CONCLUSIONS

1. The venom of *Vipera russellii* contains a coagulant which clots both normal and hæmophilic blood very rapidly in high dilutions in vitro.

2. The solutions as prepared and described have been shown to have no toxic effects when applied locally.

3. Sterile solutions can be prepared.

4. In dental and general surgery the solution has been applied with apparent success as a hæmostatic

to both normal and hæmophilic subjects without ill-effects.

We wish to acknowledge our gratitude to Prof. E. H. Kettle for his interest and encouragement, and to many other members of the staff of St. Bartholomew's Hospital for invaluable assistance and advice.

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Clinical and Laboratory Notes

ABORTUS FEVER IN A YOUNG CHILD

By A. A. Robertson, M.B. Edin.

RESIDENT MEDICAL OFFICER, CHILDREN'S HOSPITAL, SHEFFIELD; LATE ASSISTANT MEDICAL OFFICER, HOPE HOSPITAL, SALFORD

Abortus fever is rare in this country. According to Hume [1] only 15 cases were recorded in England and Wales in the three years previous to 1930. The disease is more frequently recognised in adults, but in England two cases have been recorded in children, one in a boy of 3½ years and another in an infant of 20 months.[2]

On June 2nd, 1934, a child, aged 2½ years, was admitted to Hope Hospital, Salford, with a history of drowsiness and repeated vomiting of 24 hours' duration. Her previous health had been good. On admission she was very listless and toxic-looking; the temperature was 101·4° F. and the pulse-rate 144 per minute. A few purpuric spots, each about the size of a large pin-head, were scattered evenly over the trunk and thighs. Routine examination of the various body systems revealed no abnormality. There was slight stiffness of the neck and slight congestion of the fauces. The spleen was not palpable. Routine blood culture and examination of the cerebro-spinal fluid were negative. Within a few days after admission the rash disappeared. Sixteen days after admission agglutination tests were carried out for the enteric group and abortus fever, and the test for *Brucella abortus* was found to be positive in dilutions of 1 : 30 to 1 : 160. On June 4th the white cell count was 28,750 per c.mm. (polymorphs 80 per cent., lymphocytes 11 per cent., and large mononuclears 9 per cent.).

The child was in hospital for two months, and was then taken home by her parents. While in hospital she was extremely fretful, her appetite was poor, and she lost weight. The temperature for the first three or four weeks was irregular and intermittent, usually with an afternoon rise to 103° or 105° F. During the night the temperature fell to normal or subnormal and there was considerable sweating. Towards the end of the child's stay in hospital the daily range of temperature had fallen considerably and was between 97° and 99° F. Shortly before leaving hospital a second test showed no agglutination against *Br. abortus*. Treatment was symptomatic. Crookes' collosol iodine (℥ 30 thrice daily by mouth) appeared to have some effect in reducing the temperature.

Some four weeks later she reported as an out-patient and was found to be in good health and gaining in weight at the rate of about 1 lb. per week. Two other children, aged 6 and 9, belonging to the same family were also healthy and well.

An investigation by the medical officer of health for Salford revealed that about three years ago there was an extensive outbreak of contagious abortion among the cattle on the farm from which the child was obtaining milk. Some of the cattle in the herd at that time still remained in the herd and samples of blood from two of the cows were found to give a positive reaction to *Br. abortus*. I am indebted to Dr. H. Osborne, the medical officer of health, for this information, and also to Dr. J. Dudgeon Giles, medical superintendent of Hope Hospital, for permission to publish this report.

[1] Hume, W. E.: Newcastle Med. Jour., 1930, x., 180.
[2] Dalrymple-Champneys, W.: THE LANCET, 1932, i., 791.

GANGRENE OF THE LEFT ARM DUE TO OCCLUSION OF THE SUBCLAVIAN ARTERY IN THE WALL OF AN OLD TUBERCULOUS CAVITY

By E. H. Allon Pask, M.D. Lond.

MEDICAL SUPERINTENDENT OF THE WRIGHTINGTON HOSPITAL, NEAR WIGAN (LANCASHIRE COUNTY COUNCIL)

In the following case gangrene of an upper limb occurred as a complication of chronic pulmonary tuberculosis. I have been unable to find any similar case on record.

The patient, a man aged 53, gave a history of having had "pneumonia" nine years before admission, and seven years before admission bilateral pulmonary tuberculosis was diagnosed. He was transferred to Wrightington Hospital from Withnell Pulmonary Hospital, where he had had six years' treatment (the patient had no home and his sputum was constantly positive). He had complained of vague pains in the left arm and hand for twelve months, and during the last three months there was definite tingling and blanching of the fingers; at this time there was no pulsation to be felt in the brachial or radial arteries. A month before admission the fingers became discoloured.

On admission the fingers and thumb of the left hand were black at the tips and the dorsum of the hand was mottled blue. The wrist was white and swollen with several large bullæ containing serum. The forearm was œdematous. There was no swelling of the upper arm. Pulsation was absent in the radial and brachial arteries. The urine contained albumin but no sugar. The Wassermann reaction was negative. The sputum was profuse and purulent and contained numerous tubercle bacilli.

Physical examination of the chest revealed extensive disease of both lungs with crepitations all over both sides—loudest on the left. There were no physical signs of a cavity at the right apex. The skiagram revealed a scoliosis of the whole dorsal spine with the convexity to the left, and the heart as a result was situated completely to the right of the spine. There was infiltration of all three lobes on the right side of a fine fibrotic character. On the left side there was a large cavity at the apex and below this there was medium mottling extending to the middle zone.

Two days after admission the arm was amputated at the middle third by the circular method. There was practically no bleeding from the stump except a very small amount of oozing in the substance of the triceps muscle. The brachial artery was blocked by a fairly recent clot which was not adherent to the vessel wall. Pieces of the brachial and radial arteries removed at operation were sent for section to Prof. S. L. Baker of Manchester University, and he reported: "No evidence of endarteritis, the lumen of the vessel was filled with blood clot which had not yet begun to organise. There was a well-marked peri-arteritis with thickened connective tissue containing numerous newly developed vascular spaces and capillaries. The general appearance suggested that the peri-arteritis was of some standing."

For a week after operation the wound appeared to be healing by first intention, but at the end of a fortnight there was commencing discoloration of the stump, which was painful. The patient became worse, gangrene supervened in the stump, and there was œdema of the extremities. He died four weeks after operation.

Post-mortem findings.—The body was considerably emaciated. The amputation wound had broken down,

exposing a raw black area, and there was black discoloration extending 3 inches up the arm. Both lungs were densely adherent to the pleura, and were freed with difficulty. They were removed en masse together with the heart. On dissection the right lung contained numerous areas of tubercle scattered throughout; there was a large caseous area at the apex but there were no signs of cavitation. The left lung revealed a large cavity at the apex about 3 inches by 2½ inches in diameter, with thick fibrous walls. The left subclavian artery was found deeply embedded in the upper and inner wall of the cavity for 1½ inches commencing at its origin. On opening up the vessel a dense organised adherent clot of old standing was found in the lumen. The artery distal to the part embedded in the cavity wall contained a recent clot, but it was not adherent to the vessel wall. There were numerous areas of tubercle scattered throughout the rest of the lung. No other evidence of tuberculosis was found in the other organs of the body.

Blumer[1] states that the lack of symptoms in obstruction of the large branches of the arches of the aorta is often a striking feature; in this case there was a nine months' history of vague pains in the arm and hand before any very definite symptoms appeared. They also are of opinion that gangrene is usually absent, and if present it is stated to indicate that the process is a luetic one; the Wassermann reaction was negative in this case.

I should like to thank Dr. M. MacPhee, medical superintendent of Withnell Pulmonary Hospital, for notes and information of the man's condition before admission to Wrightington, and Prof. S. L. Baker for permission to publish his report of the histological findings after operation.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

IN his presidential address to this section on Oct. 25th, Mr. J. B. MACALPINE considered the

Musculature of the Bladder Neck

of the male in health and disease. He began by drawing attention to the fact that two muscles, separated by an inch or more, exist at the bladder neck, both functioning as sphincters, the one an unstriped, involuntary muscle, receiving its nerve-supply from the sympathetic and parasympathetic; the other a striped muscle, under the control of the will and innervated by a spinal nerve. Do these two strangely different muscles play identical parts, and if so, why so strangely dissimilar? The posterior urethra is the point of meeting between the urinary and the genital streams and it is to this confluence that we owe the complication of a dual musculature. If both muscles were open when semen was being discharged from the ejaculatory ducts, that secretion would be at liberty to escape not only to the exterior but also into the bladder, whilst any urine in the bladder would escape. If both sphincters were closed, sperm would be imprisoned between them. In health, with the onset of penile erection the internal sphincter goes into spasm and imprisons the bladder contents, forbidding their interference with the sexual act.

Passing to prostatic hypertrophy it was shown that the characteristic thing is for the internal sphincter to be displaced so that it comes to lie half an inch or more down the dorsal aspect of the middle lobe. The growing adenoma worms itself through the muscle ring so that a large proportion of the gland projects within the vesical cavity. The internal sphincter is thus greatly overstretched and in its new situation can neither contract nor dilate.

At operation the enucleating finger passes between the adenoma and the sphincter. The site of the sphincter is always discernible, if a careful examination is made, as a shallow groove on the surface of the removed adenoma which often shows a thin ribbon of adhering muscle. But in numerous instances there is a quite well-marked furrow which shows that the pressure of the muscle is not a negligible force and that it evidently plays a material rôle in pressing together the various lobes of the abnormal gland and probably thus helps to obstruct the outflow of urine. Is it a revolt of this misused muscle which determines that final acute retention which may set in so dramatically? In the modern operation the internal sphincter is purposely divided at its posterior part in order to prevent a stricture forming. Sometime after healing is complete, cystoscopy will show the shrunken adenoma cavity communicating freely with the bladder. The internal sphincter is no longer competent and bladder continence depends entirely on the external. The importance of the external sphincter was illustrated by two cases in which continence failed. In the first a rectal carcinoma had previously been removed and a colostomy functioned in the left iliac fossa. Prostatectomy was performed and convalescence was smooth, but total incontinence resulted. It appears certain that, during the operation on the rectum, damage to the external sphincter or its nerve-supply had resulted in its permanent damage. Between the rectal operation and the prostatectomy the patient had relied on the internal sphincter only, and that muscle was destroyed by the prostatectomy. In the second case the external sphincter was destroyed by perineal tuberculosis. Years elapsed between the time when each of these men lost his external sphincter and the onset of prostatic obstruction, but neither was conscious of any alteration in the act of micturition, which remained fully under control. In other words, two patients whose external sphincters were known to be paralysed had complete voluntary control by means of their internal sphincters—muscles composed of plain fibres, the voluntary control of which is often questioned. The discovery by McCrea of striated muscle in the internal sphincter is thus significant. Now the prostatectomised patient (who has lost his internal sphincter) similarly has complete vesical control, so that it would appear to be a matter of indifference, so far as micturition is concerned, to have either of the sphincters out of action, so long as the other retains its normal capacity. In a large number of prostatectomies these are the only two cases in which the patient has been rendered incontinent, and in each an extraneous cause was responsible. This speaks volumes for the reliability of the external sphincter.

How does prostatectomy affect sexual potency? The injury to the internal sphincter will destroy bladder closure in many cases and will allow sperm to regurgitate into that viscus instead of diverting it to the exterior. A prostatic of 50 was concerned to know the effect of operation on his sexual capacity. During the operation pains were taken to avoid injury to his internal sphincter. Several months

later he reported that at first coitus produced an orgasm but no emission. Later, however, normal ejaculation occurred. These two phases correspond to stages in the recovery of his internal sphincter. It appears that following prostatectomy two conditions of the internal sphincter may occur, the one in which the sphincter is intact, when it remains capable of performing its sexual function and probably also its function as a sphincter of the bladder; the other in which the muscle has been permanently injured.

In prostatic enlargement the *trigonal* muscle hypertrophies to overcome obstruction. But what is its relationship to the growing adenoma? The insertion of this muscle was shown to be in the neighbourhood of the verumontanum. The two muscles of Bell normally converge on the uvula vesicæ under which are Albarran's glands. When hypertrophy affects these glands they push up between, beneath, and around the Y-shaped convergence of the two muscles of Bell. Microscopic sections of the cleft between the middle and lateral lobes show strands of longitudinally running muscle which are the direct continuations of the bundles in the bars of Bell. These muscles lie between the middle and lateral lobes and the resistance they put up to the growth of the adenoma is the cause of the furrows which they occupy and also of the prostatic division into the lateral and middle lobes which has never previously been satisfactorily explained.

An early and important sign of central nervous disease is weakness or paralysis of the internal sphincter, producing a funnel-shaped posterior urethra which can be seen cystoscopically. Amongst 21 tabetics and general paralytics examined recently the phenomenon was positive in all except two. Repeatedly it was observed that a minor degree of funnel neck would develop into a major if the bladder were more fully distended. To obtain a good view of the colliculus is the best test of the sign, and to do so the ocular end of the cystoscope must be sharply depressed. Otherwise the condition will be overlooked. In addition to these 21 known sufferers from central nervous disease, a watch has been kept upon the ordinary cystoscopic material. One hundred consecutive males produced 12 examples of a funnel neck. It is relatively easy to account for the phenomenon when discovered in a known paralytic, but when encountered unexpectedly it presents greater difficulties in interpretation.

Some examples are unexplained, so that the question must arise whether the sign is not sometimes to be found in completely healthy men. The internal sphincter therefore bears the brunt of the paralysis in nervous dysuria and the external sphincter probably retains its function comparatively well. The former, an involuntary muscle, is probably mainly responsible in health, for continence during sleep, the external sphincter relaxing like other voluntary muscles. Its paralysis therefore may play a part in the nocturnal incontinence of tabes. With most male tabetics sexual capacity deteriorates. It remains intact, however, with a proportion. Two of the tabetics were quite definite that orgasm without emission occurred routinely in their recent experience, the flow of semen undoubtedly taking place into the patient's own bladder as a consequence of the breakdown of nature's barrier, the internal sphincter. On the other hand, two patients with funnel necks of high grade quite unexpectedly reported normal ejaculation.

The case-histories of two men whose internal sphincters were destroyed by gunshot wounds were detailed. In each case coitus was normal excepting that emission failed, and in each, intercourse could be safely undertaken even when the bladder contained urine.

In another pair of cases reported by Brenner, a gunshot wound of the spine resulted in an "automatic bladder." The significant fact in these two cases was that an erection was accompanied by trickling of urine. Should ejaculation occur, the outflow of urine became more rapid. This phenomenon shows that with the onset of erection the external sphincter weakens and that the dilatation becomes more pronounced during emission, events which are not cause for surprise. On the other hand, it is evident from a study of the behaviour of the bladder sphincters in my own groups of cases where the internal sphincter alone was damaged, that the external sphincter does not relax sufficiently to allow sperm to pass unless the internal sphincter is tightly contracted, and it seems justifiable therefore to assume that a certain pressure must be developed in the posterior urethra before the signal is given for the external sphincter to yield and permit emission. If from any cause the internal sphincter fails to play its part regurgitation into the bladder takes place. Moreover, it appears that the external sphincter does not in these circumstances open up at all, for, as shown, coitus can be effected even in the presence of urine in the bladder which indicates clearly that the factors causing yielding of the external sphincter were missing.

Further illustration of the association between erection and closure of the internal sphincter may be found in the observation that certain patients with bladder stones suffer from priapism. Here again we meet the association between spasm of the internal sphincter, provoked by the irritation of the stone, and erection of the penis, an alliance which has its physiological basis in the necessity for bladder closure during coitus. When the sexual act is effective but no ejaculation eventuates, the patients invariably express the view that the orgasm is completely normal and satisfactory. This fact suggests that the orgasm is not dependent on the distension of the posterior urethra or the propulsion of spermatic fluids along the urethra. By exclusion, therefore, we are led to the view that it results from stimulation of that sensitive structure, the verumontanum, by the emerging semen.

LIVERPOOL MEDICAL INSTITUTION

AT a meeting held on Oct. 18th, with Dr. J. MURRAY BLIGH, the president, in the chair, Dr. DONALD OWEN read a paper on

Manganese Poisoning

The history of chronic poisoning with manganese dated back, he said, to 1837, when Couper described five cases. Only 15 cases had been recorded up to 1913, and these were found in France, Germany, and the United States. Esdall in 1919 reported further cases, but the first publication in this country appeared in 1922 by J. R. Charles of Bristol. The pathology was practically unknown; animal experimentation had given little help, but Findlay was able to produce cirrhosis of the liver in rabbits, and Mella changes in the corpus striatum and globus pallidus of monkeys, following administration of manganese chloride. In June and July, 1934, the speaker saw at the Bootle General Hospital four cases of chronic poisoning in men working in the same manganese works. Symptoms in one case appeared after only eight months' exposure, in the other three after 2½, 6½, and 8 years respectively. The clinical picture in each case was indistinguishable from that of chronic post-encephalitic parkinsonism, but the extent of

involvement of the extrapyramidal system varied. Signs and symptoms of hepatic cirrhosis were not found. Treatment with liver feeding, as suggested by Charles, was tried but without improvement; removal from the dusty parts of the works was essential in all cases showing symptoms of poisoning. As in other industrial diseases, individual susceptibility was a factor.

Prof. HENRY COHEN said that in four established cases which he had seen from the same factory no improvement seemed to have occurred although contact with manganese had ceased for one to two years. In these patients the general health had suffered no impairment; they may indeed survive for years in a more or less crippled state. Not infrequently a curious slapping gait is present with a tendency to walk on the metatarso-phalangeal joints. Whilst in parkinsonism some disturbance of ocular movement, especially diminution of convergence accommodation response, is almost invariable, eye changes were absent in these cases. He called attention to a recent autopsy reported by Canavan, Cobb, and Drinker (Arch. Neur. and Psychiat., September, 1934) on a case of chronic manganese poisoning in a man of 69 who died 14 years after the onset of symptoms; whilst diffuse cellular changes were found in the cerebral cortex and cerebellum, the significant pathological process was in the basal ganglia which showed shrinkage associated with degeneration of nerve-cells, satellitosis, and gliosis.

Borderline Dental Problems

Mr. ROBERT KENNON read a paper on a few dental problems of interest to the medical profession. Whereas caries was often considered to be the result of starch and sugary food, the modern child was, he said, indulging in far more sweets than formerly in order to combat acidosis. Serious infection from the teeth was rare in childhood, apart from concurrent infectious fevers when the mouth should be watched carefully for development of caries. In adults, acute pulpitis might lead to extensive osteomyelitis. More frequently the apical abscess had led to decalcification of bone over a long period of time, so that cortical sequestra were more common. The fact that the molar roots were beneath the mylohyoid ridge meant the early approach of abscesses to the neck, and these should be opened before extensive cellulitis had developed. In dental cysts the whole sac should be removed. In trismus gags were necessary, and relief might be obtained by a spring over the head, pressing lightly upon the infected joint. Ill-fitting dentures were a source of leukoplakia and carcinoma. The life of a denture should not, he thought, be more than five years

Mr. J. A. WOODS agreed with Mr. Kennon about the importance of retaining deciduous teeth when possible. Their early loss might in some cases seem an immediate gain, but it frequently led to serious irregularities later on. He dwelt on the importance of normal breathing, pointing out some of the evils seen by the dental surgeon in mouth-breathers. Where a large number of extractions was necessary it should be done in several stages. The more septic the mouth the more important this became. The clearance of the mouth of teeth at one operation should be a thing of the past.

Mr. J. COSBIE ROSS pointed out the occurrence of large sequestra in the region of the mental foramen of the mandible, following an alveolar abscess of the posterior molar. Normal bone was present in these cases between the original alveolar abscess and the residual sequestrum, and it was possible that thrombosis of the inferior dental artery was the cause of the necrosis. Mr. Ross also emphasised the association between ill-fitting dentures and carcinoma of the mouth; in an appreciable percentage of cases a definite causative relationship could be established.

Mr. A. E. BURROUGHS drew attention to the connexion between dental caries and inflammation of the ciliary body. Timely dental treatment might cause the cyclitis to clear up quickly.

Dr. G. GRAHAM MACPHEE was glad Mr. Kennon had stressed the importance of alveolar abscess. There certainly were cases where removal of the offending tooth was not advisable, but in most cases if the tooth concerned was unsaveable it should be extracted at once, without "waiting for the swelling to go down." In the treatment of true dental cysts he had obtained good results by simply removing one wall of the cyst and bringing the buccal mucous membrane into apposition with the epithelial lining. All dental surgeons would agree that dentures should be renewed more frequently; patients did not realise the harm that might be done by dentures which no longer fitted their shrunken gums.

Prof. COHEN supported the plea for closer coöperation between medical and dental practice.

NEW INVENTIONS

A TORPEDO INTRODUCER

ALTHOUGH in the treatment of carcinoma of the œsophagus most laryngologists attempt some type of radium or radon application, it must be admitted that simple intubation has much to be said for it still. The instrument here figured will be found useful and effective for the introduction of Souttar's tubes. It is a shaped pilot AB (Fig. 1) on a handle BC, over which the tube DE (Fig. 2) fits as a cannula. Owing to the sinuosity of the tube the fit is not perfect, and as the projecting edge D might catch on the growth, a tiny wooden dowel H is applied. The lower half of the pilot is swelled into a shoulder F which hitches on the tube. In use the torpedo is loaded as in Fig. 2 and it will be found to pass, with the utmost ease, down the stricture after the latter has been dilated up to the size of the dowel. When securely in position, the tube is held by a Patterson's forceps at E and the pilot is withdrawn. The latter has been left shoulderless, and also deeply grooved at G so that it does not catch on the jaws of the forceps during removal. The dowel of course slips off easily and is swallowed. Incidentally, with a set of these introducers one can insert tubes of any size required, and also dispense with the ordinary œsophageal bougies and sounds.

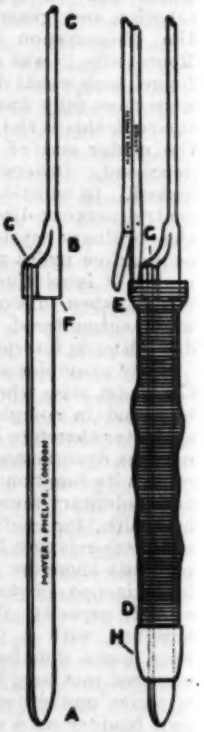


FIG. 1. FIG. 2.

The introducer is obtainable in various sizes with suitable dowels from Messrs. Mayer and Phelps, of 59, New Cavendish-street, W.

A. TUMARKIN, M.B., F.R.C.S.E., D.L.O.
Liverpool.

REVIEWS AND NOTICES OF BOOKS

Becontree and Dagenham

A report made for the Pilgrim Trust. By TERENCE YOUNG, B.A. London: S. Sidders and Son, Ltd. 1934. Pp. 420. 10*s.* 6*d.*

GROWTH of interest in social problems since the war has resulted in the publication of a number of surveys of the condition of the working-classes in urban areas. Surveys of Tyneside, of the Mersey, and of London, have to some extent followed the lines of Booth's "Life and Labour of the Working Classes" (1889) and have set the pattern for the other inquiries. Since their primary concern has been the measurement of poverty, it has been mainly the economic aspects of working-class life—wages, cost of living, occupations, health, and housing—that have been surveyed, though some space has been given to the more definitely social aspects. This emphasis is due to the uncomfortable but undeniable fact that a certain standard of living is the foundation of most other activities; partly also to the concentration of attention on districts where knowledge of social activities is easy to come by. Two new elements have however entered into the problems of working-class life since the war—viz., chronic unemployment and the provision of houses on a large scale by local authorities. Clearly the effects of these on social conditions need investigation.

The former has been dealt with to some extent in an admirable study by Mr. E. W. Bakké, Ph.D., "The Unemployed Man"; the latter has at last received attention in Mr. Terence Young's investigation of the L.C.C. housing estate at Becontree and Dagenham, carried out under the ægis of the Pilgrim Trust. Mr. Young deals with a range of problems which have become important only with the growth of large-scale municipal housing schemes, and have thus fallen outside the scope of earlier surveys. Specifically economic problems occupy a minor though interesting part of the book and add little to what is already known; similarly the effect of good housing conditions on health have not been treated in detail. No doubt this limitation of the field has been partly dictated by the lack of statistical data owing to the peculiar situation of the estate within the areas of at least three different local authorities. The survey of Becontree and Dagenham is thus, both of intention and of necessity, concerned with the problems of administration and of social life arising from the rehousing of working-class people on a large scale. Indeed it may be argued that this is the justification for adding yet another social survey to those already undertaken, for the stage is being reached where it is questionable whether the increase in knowledge from general inquiries may fail to compensate the expense involved, now that several types of towns have been studied. At any rate there are particular problems that are more urgent. The Pilgrim Trust, through Mr. Young, has courageously tackled one which is very difficult to treat statistically and therefore most liable to suffer from the bias of the investigator. In his preface Mr. Young has faced up to this difficulty of eliminating his own viewpoint from the arrangement of the material. He has however succeeded in presenting an uncoloured statement of the growth of the housing estate, and by the division of the book into three main parts—historical (or, as he calls it, cinematographic), present (or aerial), and future—has managed to consider most developments in turn, and then in relation to each other. He is to be congratulated on his solution of this problem in method.

The historical section of the book is an analysis of the problems of developing social activities and adequate urban administration pari passu with a rapidly growing working-class population in a hitherto rural area. Mr. Young's avoidance of forming critical judgments does not, however, conceal the fact that the L.C.C., in undertaking this immense housing scheme, failed to realise the effect of thrusting unwanted population on the authorities of Ilford, Barking, and Essex, and the probability of local services failing to expand with population. Thus between 1921–23 many of the children on the estate were entirely without education until the vicar of St. Thomas's put his church hall at the disposal of the Ilford council. Even after the urban district of Dagenham was formed, the development of all services, in Mr. Young's view, lagged seriously, for the whole organisation had to develop from the beginning without any effective public opinion behind it. In an exhaustive account of the work of voluntary and religious bodies, Mr. Young throws light on the part played by voluntary organisation in the social fabric, and raises the question whether the modern policy of one-class towns is socially desirable. In the second part of the book it appears that the policy of the L.C.C. towards tenants produced an abnormal age-grouping of the population which put a severe strain on local health and education authorities. The selection of young married couples with children caused a preponderance of need for maternity and child welfare services, and the favour shown to prospective tenants suffering from tuberculosis gave rise to an unusual demand for special treatment for which little provision was made.

The book as a whole suffers to some extent from Mr. Young's policy of omitting from the text both statistics and references to appendices; missing these the reader may feel that more use might have been made of such statistical data as were available. Without question, however, it is a most interesting and thoughtful study of certain aspects of the housing problem, which should be of use to students of social problems and to authorities with developing housing estates.

The Patient and the Weather

By WILLIAM F. PETERSEN, M.D., assisted by MARGARET E. MILLIKEN, S.M. Vol. III., *Mental and Nervous Diseases.* Michigan: Edwards Bros., Inc. 1934. Pp. 375. Profusely illustrated.

ALTHOUGH we are here reviewing what is entitled a third volume, it is the first volume of a series to appear, and much of the material of the earlier two volumes, which are for various reasons not ready for press, is the subject of explanatory footnotes in the present text. The first two volumes will deal with the response of the normal individual to meteorological environment, constitutional differences, and the influence of sex, and with the effect of meteorological alterations on unstable individuals; these volumes are held back pending the preparation of further meteorological data. The volume under review presents studies in mental and nervous disease, in relation to all that is included under the term "weather," and the detailed observations may stimulate other investigators to work in a field which has been to a great extent uncultivated.

The book is divided into three parts. In the first part the possibilities of psycho-analytical and meteorological approach are discussed with the suggestion that medicine has paid too little attention to the possibility that psychic alterations may be actually initiated by meteorological events. Chapters follow taking cognisance of environmental factors, and much evidence from published work is furnished to show that, among many things which may bring about a change in the behaviour or condition of patients, the season of the year appears to have unmistakable influence. The physiologists, it is suggested, have usually made their studies and based their reflections on the phenomena produced by alterations in barometric pressure; while thinking in terms of altitude, they have generally ignored the effect of weather at the usual range of habitation. This section closes with information, usually compiled from Chicago statistics, upon the regional distributions in America of physical malformations, of mentally inferior persons, and of suicide; and here the medieval habit of casting the horoscope will be brought to mind by a tabular statement of the months of conception of the various presidents of the United States. It appears that in the first seven months of the year 26 presidents were conceived, while none were conceived in what are described as the most stable months of the year in reference to weather—namely, August and September—and only five in the last three months of the year. Nine of the presidents are starred as outstanding characters as shown by their official records, of whom six were born in the first half of the year. We doubt if the figures are large enough to warrant any practical conclusion being drawn from them such as would dictate which candidate to vote for in a presidential election.

Part II. of the book relates psychiatric episodes in connexion with their meteorological backgrounds, and includes disquisitions on the rôle of the meteorological environment, emphasising the value of such studies with the following quotation from Hippocrates: "As therefore it is the first of the bodily organs to perceive the intelligence coming from the air, so, too, if any violent change has occurred in the air owing to the seasons, the brain also becomes different from what it was." Part III. deals with the seasonal and geographical distributions of such nervous diseases as multiple sclerosis, tabes and paresis, poliomyelitis, and meningitis. No attempt is made to present a complete study of the diseases; it is stated frankly that the material has been selected as it proved suitable to illustrate the relation between nervous disorders and environmental alterations.

The price of the book is not stated, but in order to reduce the cost of production lithoprinting has been used to good effect and the appearance of the book is that of being neatly typewritten. This method considerably lessens the price by the avoidance of setting up metal type, the text being typewritten directly on to metal sheets from which, after chemical treatment, the impression is taken.

British Journal of Surgery

THE October issue (Vol. XXII.) contains the following papers. Fracture of the Femur with Luxation of the Ipsolateral Hip, by Arnold K. Henry and M. Bayumi (Cairo). Two cases are reported, one treated by open reduction, the other by excision of the head of the femur. The literature is reviewed and suggestions for treatment in the different varieties of the injury are advanced.—Fragilitas Ossium Tarda, by Ian Fraser (Belfast). An account, covering four generations, of a family which illustrates the hereditary factor, and the relationship of blue sclerotics, brittle bones, deafness, scoliosis, and sprains. The course of the disease is described, and stress is laid on the recovery of bony strength at puberty.—Cysts in the Region of the Pancreas, by A. E. Webb-Johnson and E. G. Muir (London). The presence of muscle-fibres in the wall of cyst, in the case described, suggests either a teratomatous origin (from strayed genital cells), or an enterogenous origin (from sequestration of fœtal gut).—Gangrene following Fracture (excluding Gas Gangrene), by Harold Dodd (London). Three cases are reported, following fracture of the femur (one case) and fracture of the tibia and fibula (two cases). Previously recorded cases are described and tabulated. The causes, symptoms, and treatment are discussed.—Chronic Epididymo-Orchitis, or Fibrosis of the Testicle of Filarial Origin, by P. N. Ray (Calcutta). The disease causes a chronic enlargement of the testis. Filaria were found in the tunica albuginea. The differential diagnosis is considered from new growth; syphilitic orchitis and gumma; hæmatocele. The Wassermann reaction was moderately positive.—Two Cases of Osteogenesis Imperfecta, with Blue Sclerotics in Natives of India, by W. L. Harnett (Calcutta). The hereditary factor was traced in the blue sclerotics.—Cholecystitis without Stone, by W. Arthur Mackay (Glasgow). An attempt to assess the value of cholecystectomy in a series of 264 cases in which stones were not present. The nature of the pre-operative symptoms, the pathological changes in the gall-bladder, and the radiological appearances are considered in their bearing on prognosis.—Pancreatic Fistula: Report of a Case; Cure by Pancreato-Gastrostomy, by R. M. Janes (Toronto). Operation for acute pancreatitis, involving removal of a large pancreatic slough, was followed by the formation of a pancreatic cyst, and eventually by a persistent fistula.—Torsion of the Gall-bladder, by A. Rendle Short and R. Gordon Paul (Bristol). Three cases are recorded, all successfully treated by cholecystectomy. The literature is reviewed.—One-Stage Lobectomy for Bronchiectasis: an account of Forty-eight Cases, by A. Tudor Edwards and C. Price Thomas (London). A careful and detailed account of the operation and an analysis of the results, which show a mortality of 14 per cent. and a high proportion of complete cures.—Sarcoma of the Duodenum: report of a Case, by Maurice Silverstone (Liverpool).—Establishment of a Laryngeal By-pass, by H. P. Pickerell (Sydney). To replace permanent tracheotomy in a case of bilateral abductor paralysis of the cords, a silver airway was inserted connecting the upper part of the larynx with the trachea.—Excision of the Œsophagus for Carcinoma, by R. Rutherford (Uxbridge, Middlesex). Operation by the combined abdominal and cervical routes. The mobilised and divided œsophagus was drawn into the peritoneal cavity and there removed. The patient died two days later.—The Secretion of Mucus by the Epithelial Cells of the Gall-bladder, and the Experimental Production of Mucocele, by Harold E. Harding (Sheffield). Mucocele was produced by tying the cystic duct, and emptying the gall-bladder of its contained bile.—Surgical Exposure of the Œsophagus, by L. O'Shaughnessy and R. W. Raven (London). A description of the anatomical approach to the œsophagus at all parts of its course, illustrated by drawings of dissections.—The Experimental Production of Cholesterosis (Strawberry) Gall-bladder, by D. H. Patey (London). The method used was a combination of cholesterol feeding and the production of chronic inflammatory changes in the gall-bladder. It is concluded that cholesterol is deposited from the blood, and not secreted in the bile.

The Journal contains an account of a visit to Dr. Böhler's accident hospital in Vienna, and also short notes on some rare cases. The pathological supplement is devoted to the various types of fibrocystic disease.

WINSLEY SANATORIUM.—Lady Lansdowne has opened new buildings, including an administrative block, nurses' home, and women's recreation room at this institution.

THE LANCET

LONDON: SATURDAY, NOVEMBER 3, 1934

THE MEMORY OF GREAT MEN

By the death of Prof. SANTIAGO RAMÓN Y CAJAL the activities of a great student of the nervous system have come to an end. As an anatomist and experimentalist he made the microscope subservient to the achievement of his goal, which was to reveal the minute structure of nerve and to discover its processes of degeneration and restitution. In laboratories of neurology his name is enshrined as that of one who penetrated farther than most or all of his contemporaries into the arcana of neural tissue. His approach was essentially that of the morphologist rather than physiologist, although, put thus baldly, the statement may somewhat mislead. It would be truer to affirm that he believed that knowledge of micro-anatomy underlies advance in study of function. Like other leaders of research, he founded a school of ardent disciples who have carried on his methods and been animated by his spirit. It so happens that in his recent Schorstein lecture Sir FARQUHAR BUZZARD has been revealing something of the private character and clinical performance of another great man, Dr. HUGHLINGS JACKSON. In a charmingly intimate fashion the lecturer sought to convey to his hearers what manner of man Dr. JACKSON was, picturing by a series of sure touches his personality, his methods, his pecularities, and idiosyncrasies. That this should be done at all, and that the profession should be interested therein, is self-evident proof of the greatness of HUGHLINGS JACKSON; everything about him has its interest. But more is thereby intended; this sketch of the power of one man over his pupils indicates also in some degree the affection with which he was regarded by those who came closely in contact with him. Like CAJAL, JACKSON, who used to speak whimsically of his "bedlam" theories, exerted an immense influence on younger neurologists, although he founded no "school" in any technical sense; and to-day, more than 20 years after his death, his views of nervous function are permeating the minds and affecting the modes of thought of many who are not perhaps always fully aware of the source of the stimulus.

HUGHLINGS JACKSON was a great clinician, a minute observer, a patient collector of bedside facts; yet his memory is not cherished for these features of his work alone, but rather for that genius of his which could create hypotheses and put them to the clinical test, which could pierce beyond the clinically obvious to the physiologically obscure, which could see past isolated clinical phenomena to more universal laws of nervous activity. His appeal to the men who gathered round him was thus a double one; the glow of his wonderful mental endowment kindled their minds, while the charm of his personality irradiated their hearts. The combination was unusual, perhaps; at all events it was irresistible. Greatness has and always will have this effect on receptive and plastic youth. So far as neurology is concerned, there has been invariably a sprinkling of men to whom the epithet of greatness is willingly and unreservedly applied, men whose prominence transcends the boundaries of country and race, who are claimed as masters by a multitude that never knew them in the flesh. How long their fame will endure it may seem ungenerous to ask; nevertheless each generation has had its own leaders, and with its passing, often enough, there has passed their reputation and the knowledge of their attainments. The student conversant with the history of neurology, as Dr. JAMES COLLIER has shown us recently in the Harveian Oration, may be able to praise the accomplishment of not a few whose labours are entirely forgotten and whose works are now unread; in the nature of things, where science is concerned, much of their legacy becomes out of date, loses its appeal, fails to awaken response; but are they any the less great on that account?

In any field of mental activity contemplation of the fluctuations effected by time arouses curious thoughts. The great ones of literature are not always those who have so appeared to their contemporaries, and the remark is equally pertinent to the field of art, as the sale-room shows. In medical science, it is also true, though possibly in less degree, that greatness is not always recognised from the outset; there must, however, be comparatively few instances where a succeeding generation has "discovered" what its predecessors did not see—viz., that among them was a great scientist whose work would live after him. The name of MENDEL comes to mind in this regard, but in medicine itself it is not easy to cite an appropriate example. Possibly an error of the other kind is committed; we hail as a man of outstanding talent or of genius someone who, running the gauntlet of criticism later, is adjudged to have been but mediocre. Are we right in asserting that on the whole there is less risk of this in medicine than in some other spheres of mental action? It matters little, perhaps, that some contributions to medical knowledge have not in the event proved of such abiding worth as was anticipated; it matters little that, as the old tag has it, the path of advance is strewn with the wrecks of once vaunted theories; what has importance and significance is the spirit that animates the investigator, some breath of which he can impart to those that work with him or follow after. Judged by this criterion, HUGHLINGS JACKSON and RAMÓN Y CAJAL merit the appellation; they were "big" men in the modern connotation of the word. And despite the ill-considered view that clinical neurology has seen its best days and that the future lies with the physiologist and experimental pathologist, there are still numerous problems of nervous function to solve where the clinician has a finer

chance than either of the other investigators. And the clinician cannot do better than take JACKSON for his guide. Sir FARQUHAR BUZZARD has cited an impressive instance of the minute accuracy of JACKSON's observation; the need for this painstaking precision is just as urgent to-day as ever. Observation is an art that requires practice; not a few clinical phenomena of nervous disease are fleeting. To subject them to the closest scrutiny by seizing the moment of their manifestation is a matter calling for a high degree of observational skill. Further, to put them in their proper setting, to see them in their true perspective, to recognise them as the expression of nervous action, however disordered, needs a mind capable of imagination, such as was so remarkably evident in HUGHLINGS JACKSON'S case. Though new teachers arise and newer modes of envisaging nervous activities claim recognition, the student who imbues his mind with the principles that JACKSON laid down stands to benefit thereby to a wider extent than is apt now to be realised. As the memory of great "inventors," to use Dr. COLLIER'S word, is kept green by lectures, orations, or other formal procedures recurring at stated intervals, it is fitting to recall the fact here that the first "Hughlings Jackson Lecture" was delivered by himself in 1897—surely a wonderful tribute to the appreciative insight of his contemporaries—and that it has since been given by famous neurologists of English and of foreign birth. It is due again next year, on the occasion of the Second International Neurological Congress in London, when Prof. OTFRID FOERSTER, of Breslau, has been invited to be the lecturer.

IMMUNISATION AGAINST YELLOW FEVER

THE discovery by MAX THEILER in 1930 that mice are susceptible to yellow fever on intracerebral inoculation opened a new chapter in the history of immunisation against this disease, since the use of mouse-fixed or neurotropic virus for protecting human beings seemed to overcome many of the difficulties attendant on the use of the ordinary or viscerotropic strain of yellow fever virus. Two methods of vaccination have been employed. In the first, initiated in New York by SAYER, KITCHEN, and LLOYD, a combination of titrated human immune serum and neurotropic virus was injected. This method has been used by FINDLAY in London and by PETTIT and STEFANOPOULO in Paris, where, however, instead of human immune serum one prepared from the horse has been employed. Rather more than 400 persons have now been immunised by this method and the immunity has been found to last for well over two years.

In 1932 SELLARDS and LAIGRET began vaccinating volunteers with small doses of neurotropic virus alone, but the reactions were in some cases very severe. LAIGRET therefore proposed to attenuate the virus by exposing the infected mouse brains to a temperature of 20° C. for four days, two days, and one day—a process analogous, according to LAIGRET, to that used in attenuating rabies virus. The brains were then either preserved in glycerin or desiccated frozen and kept in the ice-chest. After titration in mice they were inoculated into volunteers. Three inoculations were given at intervals of 20 days; the first consisted of 1 c.cm. of a 1 in 100 dilution of four-days' mouse brain, the second of 1 c.cm. of a similar dilution of two-days' mouse brain, and the third of 1 c.cm. of a similar dilution of one-day's mouse brain. Recently LAIGRET[1] has reported the results of immunising by this method more than 3000 people, mostly whites, in French West Africa. The results would perhaps have been of greater value if by previous tests an attempt had been made to ascertain whether any of these persons were previously immune. Although immunity was satisfactorily produced, about a third of those immunised developed febrile reactions on or about the sixth day, commonly after the first, more rarely after the second or third injection; in two cases there were symptoms of cerebral involvement. These results are perhaps not unexpected, since the injection of living, even though attenuated, neurotropic yellow fever virus in the absence of immune serum has very considerable danger.

In our present issue Dr. G. M. FINDLAY records experiments on monkeys injected with infected mouse brains attenuated and titrated by Laigret's technique which show that brains attenuated for four days at 20° C. either give rise to circulating virus, or, if virus cannot be detected in the blood stream, they fail to immunise: brains attenuated for one or two days always give rise to the presence of living virus in the blood. After one of the three injections, therefore, virus is almost certain to circulate in the blood stream although, owing to the wide variations in individual susceptibility, it need not necessarily give rise to clinical symptoms. Any person with neurotropic yellow fever virus circulating in the blood stream, however, is a potential danger both to himself and to the community in which he lives. Personal danger lies first in the fact that the barrier between the blood stream and the brain may sometimes break down so that cerebral lesions result. In animals, as mentioned by Dr. FINDLAY, there have been instances in which, after subcutaneous or intraperitoneal inoculation or neurotropic virus, encephalitis has developed in the absence of any cerebral trauma, and LAIGRET himself records involvement of the nervous system in man. A second personal danger lies in the fact that in some people the neurotropic virus may give rise to jaundice and albuminuria as well as to leucopenia and bradycardia. Evidence is also accumulating to show that in animals the neurotropic virus is capable of producing visceral lesions and is pantropic rather than strictly neurotropic. It is, therefore, not impossible that neurotropic virus inoculated subcutaneously into man may on occasion revert to the viscerotropic strain. Finally, any person with neurotropic virus circulating in the peripheral blood stream is a potential danger to the community if he lives in a country such as West Africa, where *Aëdes ægypti*, the mosquito vector of yellow fever,

[1] Laigret, J.: Presse méd., Oct. 13th, 1934, p. 1593.

is also present. Although MATHIS, LAIGRET, and DURIEUX (1924) state that no epidemic followed their mass immunisation, experiments by DAVIS, LLOYD, and FROBISHER (1932) and by ROUBAUD and STÉFANOPOULO (1933) have shown that mosquitoes can take up the neurotropic virus from the blood stream of monkeys and transmit it to other monkeys, while DAVIS [2] has recently demonstrated that at every bite the infected mosquito injects at least 100 times the minimal infective dose for a mouse. Every person, therefore, vaccinated with living neurotropic virus alone should, if resident in a mosquito-infected country, be kept screened from mosquitoes from the time of inoculation of virus until the development of immune bodies in the blood—a period, if Laigret's method be employed, which might last for some weeks.

Hence it seems very doubtful if, with our present knowledge of the potentialities of the neurotropic yellow fever virus, mass immunisation with living neurotropic virus alone can in any way be justified, more especially when carried out in a country such as West Africa where *A. ægypti* is present. On the other hand, immunisation with living neurotropic virus and immune yellow fever serum provides, as shown by many observers, a reasonable method of reducing the possibilities of virus circulating in the blood stream. It will be the safest and most satisfactory means of immunisation until such time as it becomes possible to produce a virus, which is antigenically potent, but devoid of pathogenicity.

OBSTETRICS IN DUBLIN

MOST of the records of work published year by year by maternity hospitals or departments consist of a mass of statistical matter arranged in tables which are not easily comparable. The attached commentary is usually so slight as to be negligible and the deductions, if any, drawn from the recorded experience are not stated. The dedication of almost the entire issue of a substantial journal [3] to detailed annotated reports from three great maternity hospitals, situated in the same town but under independent control, is therefore welcome, especially as the report of a meeting at which their content is fully discussed is included.[4] The tables from the three institutions—the Rotunda, the Coombe Lying-In Hospital, and the National Maternity Hospital—are not, it is true, arranged in a similar pattern, but the salient features of each are demonstrated by their respective Masters, and differences of practice are not difficult to detect. In fact the first and most lasting impression left by their study is that it is no more appropriate to speak of a Dublin school of midwifery than it would be correct to assume that the teaching of the many London schools is uniform. The reaction to such ordinary obstetric problems as the choice of technique for induction, the management of persistent occipito-posterior presentation, and the conduct of the final stage of normal labour when the head is on the perineum, varies so greatly in the three Dublin schools as to show clearly once again how small is the common ground between recognised experts in obstetric practice and how great the need of a properly controlled trial of rival methods. Even a woman with eclampsia, in the treatment of which "the Dublin method" has acquired international fame, may be subjected to widely different régime according to the hospital where she may find herself. While Dr. BETHEL SOLOMONS, of the Rotunda, believes that many of his 69 patients with abundant albumin in their urine were saved from eclampsia by "routine treatment" in which venesection plays a part, and that in eclampsia "good nursing and rigid adherence to one technique are the requisites for good results," Dr. J. F. CUNNINGHAM states that at the National Maternity Hospital they did not follow the Dublin treatment rigorously; they "washed out the bowel and kept the patient warm." A heresy practised at the Coombe Hospital is more disturbing in that it disregards a principle almost universally accepted, and on ample evidence, as fundamental. In this hospital during the year under review no attempt was made to guard the perineum in normal deliveries, the birth of the head being permitted without interference. This practice is said by Dr. T. M. HEALY to have led to an increase of 6 per cent. in the frequency of perineal tears, but he considers it worth a more extended trial since its introduction "coincides" with the lowest morbidity-rate ever recorded from this hospital—2·5 per cent. according to the B.M.A. standard. It seems likely that coincidence is the right explanation. The corresponding rate at the Rotunda was 4·41 and at the National Maternity 5·5. In this connexion the Master of the Rotunda expresses his belief that a morbidity-rate of under 5 per cent. in a large maternity hospital indicates a healthy condition which should give satisfaction to the authorities concerned. We applaud his courage in hinting that in this matter there is probably an irreducible minimum and in naming a figure which may be accounted a fair standard.

The fact that the Rotunda report represents the swan-song of a retiring Master, providing a survey of his seven years of office, justifies a more detailed consideration of its message. In the first six years of his Mastership the maternal mortality for externs showed the low rate of under 1 per 1000. It is disappointing that 9 deaths in 1933 (among 1802 deliveries) raises the mortality for the seven years to 1·6 per 1000. The intern mortality for 1933 was 3·3 per 1000 deliveries, corresponding figures for the other hospitals being 10·3 (National Maternity), 7·0 (Coombe). Vaginal plugging as a routine treatment for accidental hæmorrhage has been abandoned at the Rotunda; in all except one of the 29 cases the membranes were ruptured and a tight binder was applied. On the occasion when plugs were used labour had not set in when they were removed, so Willett's forceps were applied and the infant was born alive six hours later. The master considers these forceps to be least suitable for the purpose for which they were

[2] Davis, N. C.: Amer. Jour. Trop. Med., 1934, xiv., 343.
[3] Irish Journal of Medical Science, August, 1934, pp. 331–479.
[4] Transactions of the Royal Academy of Medicine in Ireland, ibid., p. 492.

originally intended, but finds them of great value in cases of inertia and for keeping the head in position after correction of a malposition. Eighteen cases of placenta prævia were admitted in the year, none of which were treated by Cæsarean section. Podalic version was the method of choice and all the mothers left the hospital alive and well. Two were given blood transfusions during the puerperium; this treatment is deemed valuable when the patient suffers loss of blood and the temperature starts to rise. The 55 cases of disproportion formed about 1 per cent. of all cases treated. This percentage is very low compared with that shown by other obstetric hospitals. No mothers and only 3 children were lost, 18 were delivered spontaneously, 7 by forceps, 3 after version, and 27 by Cæsarean section, mostly the lower segment operation. In the 9 patients who had previously had Cæsarean section the delivery was effected by the vaginal route. Dr. SOLOMONS has convinced himself that trial labour with a view to vaginal delivery is safe after previous section provided that the woman is in hospital and is carefully nursed. None of the 14 cases of uterine inertia required Cæsarean section. Pituitary extract is regarded as dangerous in this type of case, the routine treatment being prolonged hot vaginal douches twice daily and rest secured by hypnotics.

There was no death from puerperal sepsis at the Rotunda during the year. Dr. SOLOMONS deprecates the fashion of putting down every epidemic of sepsis to droplet or throat infection and believes that the use of masks, except when the accoucheur has a cold, tends to obliterate from the mind the important principles that make for clean delivery. His thesis is that "If people would learn how to wash hands, how to put on gloves, and not to maul them when on, to keep a bowl of antiseptic beside them during the progress of a case, not to touch the vulva, not to make unnecessary examinations, to avoid traumatic deliveries, to follow a rigid and simple technique in the puerperal wards, the incidence of sepsis would be practically nil." His final plea, which all will endorse, is for a renascence of interest in the study and teaching of obstetrics. Gynæcology, as he rightly says, is so much simpler to teach and learn than obstetrics, that students, both post- and under-graduates, in a maternity hospital should be impressed with the fact that it must take second place to obstetrics. It is natural enough that the senior more experienced specialists tend to concentrate on gynæcology and to leave the practice and teaching of midwifery to their juniors. But this means that their ripe experience acquired at great cost of leisure and rest over many years is being largely wasted. It is to be hoped that at the British Post-Graduate Medical School obstetrics will be raised to its full dignity as one of the most important, though still one of the most backward, branches of medical achievement.

ANNOTATIONS

THE NOBEL PRIZE WINNERS

THE Nobel prize for medicine and physiology for 1934 has been awarded to G. R. Minot, W. P. Murphy, and G. H. Whipple for their valuable research into liver therapeutics in connexion with anæmia. It is not yet possible of course to assess the full significance of the contribution these men have made to medicine and physiology—and, one might add, to the economic organisation of society. But, as is true of all great discoveries, not the least part of its value is the new vision it has given to other workers in other fields. Minot, Murphy, and Whipple may well be described as horizon makers.

Whipple, during an elaborate study of hæmoglobin regeneration in animals made anæmic by hæmorrhage, found that liver was more effective than any other substance in promoting hæmoglobin formation. Minot and Murphy then showed that liver given by mouth in large amounts to patients with Addisonian pernicious anæmia brought about a complete remission in the disease—a remission maintained as long as liver was taken in sufficient quantity. Their paper was published in 1926: before that time pernicious anæmia was a fatal disease; to-day it no longer deserves its ominous name, and sufferers from it may be as fit as their fellows. These observations, together with the work of Peabody, Weiner, and Kaznelson on the bone-marrow, led to a new conception of the ætiology of certain blood diseases. It became clear that some of the anæmias arose from a failure of red cell development rather than to absence of marrow or destruction of cells. It was also evident that this failure of development was due to a lack of factors essential for hæmopoiesis. In other words, many anæmias must be regarded as deficiency diseases. It has since been shown by careful clinical and animal experiment that many substances, besides the one present in liver, are required for red cell development; for instance, iron and copper. A deficiency of hæmopoietic factors may be due to lack of essential substances in the food—in the nutritional anæmia of infants for example—but it may also be due to a "conditioned deficiency," that is to say, a deficiency dependent upon some failure of function in the body, such as inability to excrete gastric juice. Wholly new to medicine and arising from the work of Minot, Murphy, and Whipple, the conception of a conditioned deficiency as a cause of disease has already proved applicable to branches other than hæmatology. Minot and his colleagues have shown that the polyneuritis of pregnancy and alcoholic polyneuritis are deficiency diseases in which both defective diet and a conditioned deficiency play parts, and there is every reason to suppose that such deficiencies are concerned in a variety of diseases. The foundation for work on these lines has been well and truly laid in the long series of admirable papers that have come during the last few years from the departments in charge of Minot and Whipple or from the men whom they have trained. If Whipple has developed an exquisite technique applicable to experiments on animals, Minot has shown yet again how far-reaching in its results a similarly exact technique may be when applied to the clinical study of human disease.

Besides giving us a cure for a fatal illness and a key to many pathological locks, Minot, Murphy, and Whipple have provided fresh and urgently needed knowledge of the extreme importance of an adequate and varied diet in maintaining the general health of

the community—knowledge which has been increased a hundredfold by eager workers in the scientific field. As was pointed out at the British Association both this year and last, it remains for the statesmen of the world to apply such information to the organisation of society.

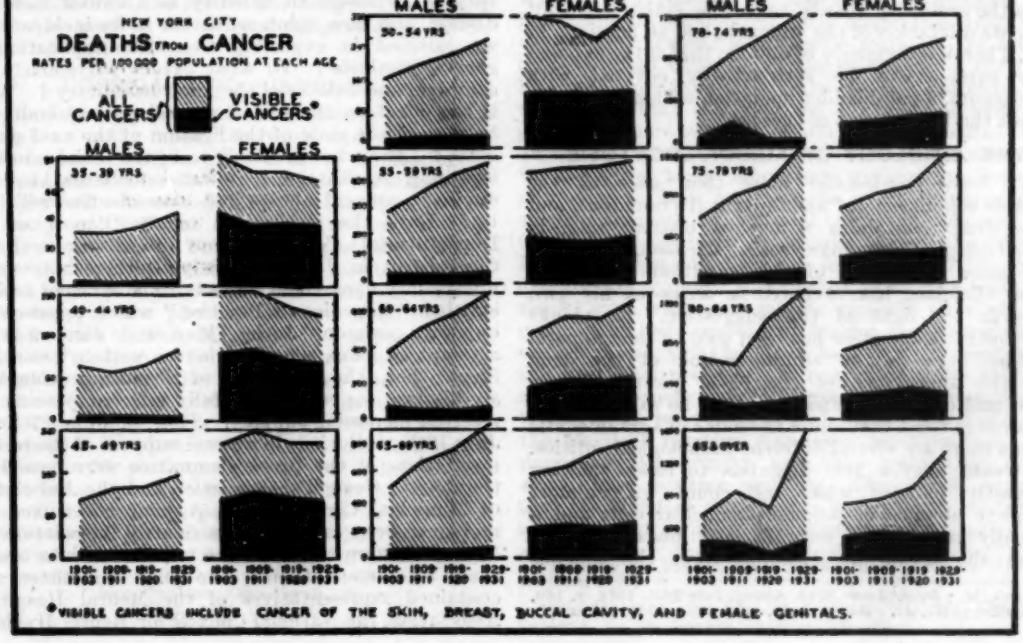
IS CANCER BECOMING MORE PREVALENT?

THE significance of the undoubted rapid increase in the crude figures for the recorded mortality from cancer in most civilised countries is still for many people a matter of controversy. Recent correspondence, both in our columns and in those of the *British Medical Journal*, is sufficient evidence of this. For their benefit we reproduce here an instructive graph taken from a recent paper[1] by C. Bolduan and L. Weiner of the New York Department of Health. In all discussions based on crude mortality figures from cancer two things have to be borne in mind: first, the figures do not represent the actual but the recorded mortality. That means that they include those cases which have been diagnosed as cancer but which were not cancer, and that they do not account for those cancer cases in which the diagnosis was missed. The extent of this error can be roughly estimated by an examination of the hospital records of autopsies. Such investigations, which have been made repeatedly in the past, have shown that even in the best hospitals the error of diagnosis is between 20 and 40 per cent., that this error falls mainly on the internal organs which are inaccessible to diagnosis, and that the percentage of missed diagnoses is much greater than that of cases erroneously diagnosed as cancer. The actual mortality from cancer is therefore certainly higher than the recorded mortality from cancer, and the difference has been estimated in the past as being from 30 to 50 per cent., when the whole population is taken into consideration, since the hospitals offer the most favourable conditions for a correct diagnosis.

[1] Quarterly Bulletin in Amer. Jour. Cancer, 1934, xxi., 825.

The second factor to be considered is the changing age-constitution of a given population in the direction of a relative increase in the number of middle-aged and old people. In New York City, for instance, to which the graph refers, the number of people over 45 years of age is now one-third greater than it was a generation ago. Since cancer increases in frequency with advancing age, this factor has to be excluded, if we wish to find out whether there is any increase in the mortality from cancer apart from the increase due to a greater number of middle-aged and old people. In order to analyse the crude mortality figures in such a way as to exclude these disturbing factors, the authors take the deaths from cancer calculated per 100,000 population at different age-groups in the two sexes, and they separate the cancer mortality in the accessible sites—where the error of diagnosis is small—from that of the inaccessible sites. A glance at the graph shows that in the accessible sites (called by the authors "visible cancers") where the errors of diagnosis were not much more frequent 30 years ago than they are now, the death-rate from cancer has not increased since 1901. Cancer of the inaccessible sites, on the other hand, where improvements in the method of diagnosis during the past 30 years are likely to have increased the number of correct diagnoses, shows a rapid increase which is, however, restricted to the older age-groups and is especially marked in males.

This is not the first time that this method of analysing the crude mortality figures from cancer has been applied. It was developed in this country 40 years ago by King and Newsholme, and has since been applied to different populations by a number of authors such as Bashford, Heiberg, Willcox, Weinberg and Gastpard, Wells, Peller, and Schinz and Senti—and always with the same result. Indeed, Peller claims that the figures for Vienna actually show a decrease in the fourth to the seventh decade, and that an increase is limited to age-groups over 70 years of age. These analyses were made, not on national statistics, but on the statistics of big cities



where, owing to the presence of large hospitals, the most efficient medical service is available, so that the disturbing factor of diagnostic errors is minimised. All the authors arrive at the conclusion that apart from the increased cancer mortality resulting from the greater longevity of the population, cancer is probably no more prevalent to-day than it was one or two generations ago. Whatever view one may take of this conclusion, the facts are established sufficiently clearly to serve as a warning against the uncritical use of crude figures representing the recorded cancer mortality.

ELECTROCOAGULATION IN GALL-BLADDER SURGERY

THOREK [1] thinks that leakage of bile from the raw liver surface that may be left after extirpation of the gall-bladder has a good deal to do with the relatively high mortality of this undertaking. The bile comes from exposed bile-capillaries and ducts, and its leakage, he believes, is aggravated by the presence of drains. His own procedure is designed to leave a dry liver "wound" and a scar in the liver that will heal without bleeding; it dispenses altogether with drainage. The operation is a partial cholecystectomy, the part of the gall-bladder adherent to the liver bed being left in situ and there treated by electrocoagulation, which effectively seals the capillaries and bile-ducts in the underlying live surface and converts the whole thickness of the gall-bladder wall into a sterile inert tissue, dehydrated and solid. This tissue has been shown in experimental operations to be eventually encapsulated and absorbed. Dense adhesions form at the height of the reparative process, but at its completion they are represented merely by a few fine strands. Because of the pressure of the coagulated mass, secondary hæmorrhage need not be feared; moreover the likelihood of embolus is said to be minimised by the absence of thrombosing action of the electrocoagulating current on the vessels of the liver. The method described in detail in Thorek's paper has been successfully employed in 75 cases without a death. Apart from the avoidance of biliary seepage, the absence of drainage lessens the liability to hæmorrhage from the erosion of vessels, to cardiac embarrassment, to acute dilatation of the stomach, and to hernia. In fact, Thorek is definitely of opinion that if the exposed liver surface can be satisfactorily covered with peritoneum, a gall-bladder operation without drainage stands the best chance of success.

THE ÆTIOLOGY OF AGRANULOCYTOSIS

WE have commented more than once on the possible significance of amidopyrin (Pyramidon), and other drugs containing a masked benzene ring, in the ætiology of agranulocytosis. Jackson,[2] who had had more experience of this syndrome than any other clinician, has reviewed a series of his own cases in the light of this suggestion. He thinks that too little attention has been paid to the temporal relation between the administration of the drug and the appearance of the blood picture before, after, and during the disease. Also, he says, it must be borne in mind that under the name of agranulocytic angina there are several different pathological entities. He would confine this diagnosis to cases showing a greatly reduced white cell count with almost complete absence of polymorphonuclear cells and a virtually unimpaired red cell and platelet count. There should be no bleeding from the mucous membrane, no enlargement of lymphatic glands—unless it can be readily accounted for by local sepsis—and no notable enlargement of the spleen. Further, at the height of the disease few if any immature white cells should appear in the peripheral circulation. Neither the fever nor the ulcerations are characteristic; indeed, the latter may be absent. Extreme leucopenia with a relative or complete absence of granular white cells, is, Jackson claims, not pathognomonic of a single pathological entity. "Such findings do not by any means make the diagnosis of agranulocytic angina," for extreme leucopenia may be seen in aleukæmic leukæmia, in Hodgkin's disease, in miliary tuberculosis of the bone-marrow, sometimes in metastatic bone carcinoma and in patients with overwhelming sepsis. In true agranulocytic angina the prodromal symptoms are often such as call for the administration of antipyretics, and this makes it easy to blame the remedy for the signs and symptoms. Having analysed 27 of his own cases (which he believes to present the classical picture and in which there was unequivocal evidence about the administration of pyramidon and allied drugs) in 26 per cent. of them, he considers, the disease may have been caused by these drugs. In 30 per cent. of the cases a critical examination of the evidence showed that although the drugs were taken in considerable quantities they had no causative relation to the disease. Forty-four per cent. of the 27 patients had no medicaments of this type, yet their clinical and hæmatological pictures were similar in every respect. The number of cases is small but the close analysis of them, taken in conjunction with the other available evidence, suggests that while in all cases of apparent agranulocytosis an extremely careful history of drugs employed must be obtained, such drugs are of ætiological significance only in a proportion of cases. As Jackson says, "Chance alone may play havoc with our reasoning."

VOLUNTARY STERILISATION

HUMAN sterilisation is a complicated question with genetic, psychiatric, physiological, and social aspects. How much importance, it is frequently asked, are we entitled to assign to heredity as a causal factor in disease, and how much reduction in its incidence are we justified in expecting from the application of genetic methods? To what extent particularly are disorders and defects of the mind hereditary? What is the effect on the sexual physiology and endocrine balance of the male of the ligation of the vasa deferentia? And what are likely to be the social results of legalising sterilisation? What safeguards shall we devise to prevent abuses and how effective will they be? Until the publication of the Report of the Departmental Committee on Sterilisation (Brock Committee) in January this year there was much uncertainty upon these subjects. The series of articles entitled "Eugenics in Practice" which appeared in our own columns during May and June was an attempt to focus consideration on certain essentials. Since then the proposal of legalising voluntary sterilisation for certain carefully selected persons has received increasing support. Thus, on June 27th and July 19th resolutions in general support of the recommendations of the Brock Committee were passed by the County Council's Association and the Association of Municipal Corporations. A joint committee has moreover been called by the Central Association for Mental Welfare to secure the translation into law of these recommendations. The joint committee also contained representatives of the Mental Hospitals' Association, the National Council for Mental Hygiene,

[1] Thorek, M.: Jour. Amer. Med. Assoc., July 21st, 1934, p. 169.
[2] Jackson, H., Jr.: Amer. Jour. Med. Sci., 1934, clxxxviii., 482.

and the Eugenics Society. The Royal College of Physicians of London and the Royal Medico-Psychological Association have appointed representatives without power to commit their respective associations. The joint committee has produced a Handbook for Speakers and would be glad to get into touch with medical men and women who are in sympathy with its aims. Communications should be addressed to the Secretary, Joint Committee on Voluntary Sterilisation, 69, Eccleston-square, London, S.W.1.

REACTION TO NEUROMUSCULAR IMPULSES

NERVOUS activity is now attributed, following observations made during the last few years, to the passage of single impulses in rapid succession along the fibres. The magnitude of their effect upon an end-organ—e.g., group of muscle-fibres—depends on their frequency, a strong reaction being provoked when impulses follow rapidly upon each other and a weak reaction when they are more widely separated. A recent paper by Lady Briscoe, M.B.,[1] shows that the story is not quite so simple as this, in that a sudden change from one frequency to another does not always give the expected result. The first series of impulses appears to have an "after-effect" which is manifested sometimes as a favourable and sometimes as an unfavourable influence on the second series. The factors determining the type and duration of this after-effect involve highly technical questions associated with strengths of stimulus and the actual frequencies of stimulation used. It is interesting to note that the experiments were performed upon nerves which, though normal in other respects, had been severed and were connected only to muscles and not to the central nervous system. In spite of this, certain of the effects were profoundly modified, and even reversed by varying the depth of anæsthesia, and Lady Briscoe suggests that the depression of reflex activity seen in deep anæsthesia may have a purely peripheral component. Moreover, the results were also influenced by the state of tonus existing in the rest of the musculature of the body, emphasising the important part played by the circulation, which was the only connecting link of the muscle under investigation with the rest of the body. The author describes a method for estimating general tonus in another communication.[2]

CORRIGAN AND HIS PULSE

IN the September number of the *Annals of Medical History*[3] an essay upon the work and personality of the famous Corrigan gives a fairer impression of the man than will be derived from the contemptuous and imperfect account of him that is given in the Dictionary of National Biography. Corrigan has gone down to fame as the discoverer of the "water-hammer pulse," the pulse with the forcible impulse followed by collapse and accompanying aortic incompetency. The phenomena were described first in THE LANCET on Feb. 7th, 1829, in a paper entitled Singular Pulsation of the Arteries—necessity of the employment of the stethoscope, and in the clinical account of a case of aortic aneurysm it is seen that the paper was written primarily to proclaim the virtues of the stethoscope, which had been introduced some 16 years previously, but whose value had not been properly recognised. The real message contained in Corrigan's paper seems to have escaped the attention of the contributor to the Dictionary. A few weeks later in the same volume of THE LANCET Corrigan writes a paper entitled An Inquiry into the Causes of Bruit de Soufflet and other stethoscopic manifestations of cardiac disease, again laying stress on the value of the stethoscope though demurring to some of Laennec's deductions from its use. The first of these papers contains the earliest demonstration of Corrigan's pulse, though the article which established his fame appeared in the following year in the *Edinburgh Medical and Surgical Journal*, where he described the symptoms resulting from an inadequacy of the aortic valves. Clifford Allbutt, in Allbutt and Rolleston's "System of Medicine," definitely attributes to Corrigan our early knowledge of the mechanism and symptoms of aortic regurgitation, and makes no allusion to claims of priority set up in favour of Vieussens or Hodgkin. Corrigan is included in medical history in connexion with the water-hammer pulse, but he was a great general physician and before his day as a hygienist. He was deeply interested in medical sociology, and made investigations into the relation between starvation and typhus fever in Ireland which were of practical value. He was for a time Member of Parliament for the city of Dublin, and served five times as president of the Royal College of Physicians of Ireland.

MICRO-METHODS IN THE DIAGNOSIS OF SYPHILIS

THE general trend in the serology of syphilis during the past decade has been towards a flocculation test to replace the cumbersome Wassermann reaction. At the League of Nations Conferences at Copenhagen in 1928 and Monte Video in 1931 reports were made of comparative tests carried out on a large scale. With the Wassermann as the indicator, the various flocculation tests were graded; the final conclusion arrived at was that for the time being at any rate it would be unsafe to rely entirely on any single flocculation test, and it was recommended that a recognised Wassermann reaction should be carried out as a routine—confirmed by a recognised flocculation test done on the exact lines indicated by the author. Dr. E. J. Wyler[1] in this country has revived interest in the Wassermann reaction by describing a method for increasing its sensitivity. His contention that the use of larger quantities of serum increases the sensitivity without diminishing the specificity of the test has been corroborated by Dr. R. W. Fairbrother,[2] who found that this modified Wassermann reaction gave him more reliable results both in treated and untreated cases of syphilis than did the Kahn reaction. On the other hand, laboratory workers are inclined nowadays to look for methods which demand ever smaller amounts of material, and the accuracy of these micro-methods is always being questioned. Dr. Wyler has now[3] set out four tests for the serodiagnosis of syphilis, so modified as to give accurate results even when only minute amounts of serum are used. The tests considered besides the Wassermann are the Kahn and the Meinicke micro-reactions, and the Rosenthal reaction. In controlled series of tests all these showed remarkably good agreement with the Wassermann reaction and with the clinical findings: the Meinicke reaction was more sensitive than the particular Wassermann used, but yielded an occasional false positive reaction. This would suggest that the Meinicke should only be used as a confirmatory test, but owing to the simplicity of its technique

[1] Jour. Physiol., 1934, lxxxii., 88.
[2] Ibid., 1934, lxxxi., 19.
[3] 1934, vi., 381.

[1] Ministry of Health, Pub. Health Med. Subjects No. 67. London, 1932.
[2] THE LANCET, 1934, i., 625.
[3] Ministry of Health. Report on Public Health and Medical Subjects, No. 74, London, 1934, pp. 26. 6d.

and the extraordinary small amount of unheated serum required for its use, Wyler urges that it should be adopted as a routine. The Kahn micro-method, using only 0·06 c.cm. of serum, compared favourably with the standard Kahn method, which has now stood the test of time well. The Rosenthal reaction is simple to carry out, and very specific, showing accurate agreement with the Wassermann, but it is not so sensitive as the other flocculation tests. In his survey of the results Wyler admits, however, that where but a minute drop of serum is available—sufficient only for one test—it would not be right to rely entirely upon a micro-flocculation method, and the micro-Wassermann remains the method of choice. As all four tests described can be done on a total of 0·15 c.cm. of serum, which is readily obtainable from 0·5 c.cm. of blood, it should be simple for any pathologist having to deal with small amounts of sera to adopt the Wassermann and Kahn reactions here described, and to do a standard flocculation test as well as a complement-fixation test. The prevalent belief that it is difficult to obtain half a cubic centimetre of blood in routine pædiatric practice appears rather surprisingly to be shared by Dr. Wyler. This is not the view held by most experienced workers.

SURGICAL INSTRUMENT CRAFT

THREE years ago at the annual dinner of the Surgical Instrument Manufacturers' Association, Sir Thomas Dunhill surveyed the relation between instrument maker and surgeon, from the time when the operator was able himself to make the simple tools required for his work. Little by little the two crafts diverged, some becoming more interested in making instruments, others in using them. For himself, he added, while he favoured simple instruments, a patient's life might depend on the availability of complicated apparatus. Mr. Patrick Maw (of S. Maw, Son and Sons) presided on that occasion, and at the annual dinner last week when Mr. H. Guy Drew (of Down Bros.) presided, Mr. W. H. Ogilvie spoke of the making of surgical instruments as a craft comparable to that of the boat-builder. The motor industry, he said, typified all that he hoped that the surgical instrument maker would never become; every year the design was more beautiful and the quality of the work worse. The maker of motor-cars had ceased to be a craftsman, but surgical instrument making should and would remain the individual work of artists in wood, metal, leather, or glass; and the worker must be not only an artist but something of a chemist, mathematician, and even a fashion expert. Recently Mr. Drew had designed for him a sewing machine which might save half an hour of an operation and a prostate needle which would easily put stitches into impossible positions. Ten minutes in Mr. Drew's office would turn one of his own Heath Robinson drawings into a feasible specification. Mr. Drew in reply said something about the enormous progress in the art of surgery since the war. In a single week, he remarked, British manufacturers might be called upon to produce 100 new designs of surgical instruments. He spoke of the evils of standardisation in arresting progress, and was happy to announce the inauguration, in this the eighteenth year of the Association's life, of an Institute of British Surgical Technicians with two duties: (1) to evolve a code of professional conduct; (2) to bring into being an educational scheme with a nationally recognised certificate. It was hoped ultimately to obtain similar recognition to that of other groups of medical auxiliaries. The manufacturers of surgical appliances were working even under a greater disadvantage than surgical instrument makers because of the traders who antagonised the public by their advertising and business methods. No surgical appliance maker was admitted to the Association without a certificate of skill, experience, and repute, plus an undertaking that he would not sell or fit any appliance without the instructions, or the subsequent approval, of some qualified medical authority. The Association had started a course of training in anatomy and physiology at the Chelsea Polytechnic, at the end of which examinations would be held and certificates granted. This year the classes had doubled in number and the scheme was already assured of a sufficient number of entrants to make it a success.

THE VALUE OF AVERTIN

THERE are still anæsthetists who doubt the advisability of any wide use of Avertin. They are mostly to be found perhaps among those who have had least experience of the drug and they will find little support in a recent paper on the subject by Wesley Bourne.[1] He gives details of a thousand administrations and they clearly show the value of this basal narcotic when properly employed. Proper employment means in the first place careful discrimination among patients so that the most suitable and the safest dosage may be given. No hard-and-fast determination of dose by body-weight alone can be consistently satisfactory. As with other anæsthetics, so with avertin, the patient's reaction is in accordance with his habits, his general physique, and above all with his mental attitude. These must be studied and the amounts given must be lessened or increased in agreement with the anæsthetist's estimate of the patient's reaction. Bourne favours a general level of dosage higher than that commonly accepted, and in a third of his patients no other anæsthetic was required. It should rarely be necessary to supplement the avertin with any anæsthetic other than nitrous oxide, and avertin by itself causes no nausea. Among the thousand patients there was no fatality which could be fairly attributed to the drug.

Manchester Royal Infirmary has opened its resident posts to women on equal terms with men.

Dr. Mabel L. Ramsay is standing in opposition to Sir Henry Brackenbury for the seat on the General Medical Council, as a direct representative for England and Wales. Dr. Ramsay has been engaged in general practice for the past 28 years, 26 of these in Plymouth, where she is now specialising in obstetrics and gynæcology. She has been president of the Medical Women's Federation and represents it on the Insurance Acts Committee, and she is a member of the disciplinary procedure committee (N.H.I.) of the Ministry of Health. Dr. Ramsay believes the time is opportune for the appointment of a woman Councillor, for of the total number of names on the Register more than 5000 are women.

Dr. Leonard Kidd is inviting registered medical practitioners resident in Ireland to elect him again as their representative on the General Medical Council when his term of office expires on Dec. 31st. He has sat on the Council since 1906 and has served on the examination, education, public health, and pharmacopœia committees. He stands as a provincial general practitioner, having always held that the elected members were intended by the legislature to be general practitioners, not connected directly or indirectly with the teaching and qualifying bodies, each of which nominates its own member. Dr. Kidd is a past president of the Irish Medical Association.

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[1] Canad. Med. Assoc. Jour., September, 1934, p. 276.

PROGNOSIS

A Series of Signed Articles contributed by invitation

XXV.—THE PROGNOSIS OF IRITIS AND IRIDOCYCLITIS

THE essential condition which governs the prognosis of iritis and iridocyclitis is the ætiology of the inflammation. Unfortunately many cases cannot be traced to any very obvious kind of infection, and it is therefore difficult to give any definte forecast of the probable duration of the disease and of the efficiency of the eye as a seeing organ thereafter. No matter what the ætiology, however, iritis or iridocyclitis can never be considered lightly. Even in the slighter degrees of the acute form, three or more weeks must elapse before the inflammation completely subsides if everything goes favourably; the most favourable signs are a rapid and complete dilatation of the pupil with atropine and the rapid disappearance of pain and congestion. Where the pupil responds slowly or not at all, and when the signs and symptoms of inflammation persist, an iritis is likely to become a cyclitis; and an iritis which persists has an unfortunate tendency to relapse, while the duration of a cyclitis may certainly be reckoned in years. In dealing with an organ of the structural delicacy and refined function of the eye, the time factor is of considerable importance, for small changes have large effects. Moreover, while in most organs of the body healing by scar tissue is the end to be desired, anything corresponding to a scar in the eye is a disaster, and when an inflammatory process has progressed much beyond the stage at which almost complete resolution is possible, perfect functioning is rarely regained. Comparatively slight cases of iritis or cyclitis may leave very serious results if they are improperly treated; and such results in severe cases are the rule, no matter how they are treated.

Types of Anterior Uveitis

It may be well to consider the more usual types of anterior uveitis seriatim from the ætiological standpoint.

SYPHILITIC

Although syphilis is a common disease, syphilitic iritis does not appear to be very common. The most recent figures show that it occurs only in from 0·42 to 5·37 per cent. of patients. We may differentiate three types: the first of these occurs in the relatively acute secondary stage, and, although most of these cases are indistinguishable from any ordinary iritis, recognisable signs of secondary syphilis elsewhere are usually to be found if looked for carefully.

The second type may occur in the course of the disease or possibly as the result of faulty treatment. If, for example, in a case of well-established untreated syphilis, arsenicals are vigorously used in the early stages, a large number of spirochætes are killed, their toxins are liberated, and a Herxheimer reaction is produced which may involve the iris. On the other hand, if efficient treatment is begun early, but is not continued for a long enough period, the iris is very liable to a "rezidiv" reaction, since it and the uveal tract, in common with the central nervous system, are slow to develop natural immunity. If, therefore, the normal inflammatory response has been aborted by the early use of antisyphilitic remedies, the few spirochætes that remain after treatment has ceased will find, so to speak, a virgin soil and grow apace, with the production of severe iritis. These recurrent attacks of inflammation were considerably more frequent when the possible harmful effects of initial doses of arsenical compounds were not fully realised, and when it was thought that relatively few doses constituted adequate therapy; to-day, when the treatment of syphilis is thoroughly understood, their incidence is much more rare.

A further and very rare type of syphilitic iritis is the severe plastic cyclitis which occurs in young infants with congenital syphilis; this is almost invariably of grave prognostic significance. In the other syphilitic types, provided adequate treatment is undertaken before grave structural changes have occurred, the prognosis is not necessarily bad, although improvement is usually very slow.

It is obvious, of course, that patients with syphilis may develop iritis from other causes; on the other hand, it is not uncommon in late syphilitic iritis, as in other late manifestations of this disease, to find the Wassermann and other serological tests negative. Nor is the therapeutic test, depending on the response to specific treatment, reliable, since ocular manifestations of syphilis are notoriously difficult to cure, and, again, many cases of non-specific iritis are benefited by a course of arsenical treatment. The patients with the anterior type of uveitis (iritis) as a rule respond more favourably than those with the posterior type (choroiditis). It may be suggested that in a small percentage of cases the ætiology of uveitis is syphilis, and that antisyphilitic treatment is of benefit in about 60 per cent. of these cases of syphilis. In about 40 per cent. of the cases in which syphilis is not a factor, antisyphilitic remedies are of definite benefit also.

GONORRHŒAL

An initial attack of iritis frequently occurs in the subacute stages of gonorrhœa, usually associated with an arthritis. This iritis may be extremely acute, the anterior chamber filling with a characteristic gelatinous exudate. Provided treatment is opportune and efficient, the prognosis of such an acute attack, considering its alarming clinical appearance, is frequently good: of more serious prognostic significance is the tendency to relapse. It is a story more common than appears to be generally supposed, that after an initial attack of gonorrhœa nothing may happen for many—perhaps 20—years, but that thereafter bilateral attacks of very great severity and great chronicity occur, probably because some anaphylactic element is operative whereby the iris becomes sensitised to the action of toxin. To overcome this, unusually prolonged vaccine treatment is necessary; otherwise any factor which dislodges a few cocci or their toxins is liable to excite an immediate and violent reaction in the sensitised iris. It is possible that the condition is not simply due to the gonococcus, but is complicated by an associated infective prostatitis in which the streptococcus plays a preponderating rôle. But in any case the severity of each attack and their recurrent habit make the prognosis grave, each one doing to the iris a little more damage which may be permanent, and adding to the media a few more opacities which, being cumulative, may become serious, unless efficient local treatment is applied to the deep urethra and prostate as well as thorough desensitisation by means of a vaccine.

TUBERCULOUS

Typical tuberculous iritis, which usually occurs in adolescents or young adults, but is on the whole a rare condition, is not necessarily associated with a prognosis so grave as its nature might seem to warrant.

When the disease is recognised and treated before fundamental damage accrues to the tissues of the eye, a great deal can frequently be done; but treatment must be thorough and, above all, prolonged, including rest on a sanatorium régime, artificial sunlight or natural sun treatment in alpine surroundings, and tuberculin given persistently for one or two years. Atypical tuberculous irido-cyclitis, on the other hand, is probably a very common condition. Unfortunately it is an exceedingly vague clinical entity; mostly it has nothing to differentiate it from other types of irido-cyclitis, and the diagnosis is frequently the unsatisfactory one of a process of elimination in the absence of other possible causes and in the presence of positive serological tests for tubercle. It is probable that it is essentially a demonstration of an allergic state: a healed focus of old tuberculosis may light up as a result of extreme exhaustion; the tubercle bacilli are disintegrated as the patient has acquired immunity, but in their disintegration they set free tuberculo-protein; unfortunately the patient is allergic and therefore develops a tuberculo-allergic iritis, an attack of what would clinically be termed a simple iritis. There appears to be no question (except in the rarest cases) of the actual lodgment of tubercle bacilli in the eye, and the disease is by no means necessarily of the malignant and destructive type. By its chronicity it frequently does irreparable damage to the ocular media; but on the other hand it may assume relatively benign forms, and in favourable cases it is kept in check and eventually quietened by desensitisation by tuberculin, provided the tuberculin is persisted in for a sufficient period of time. The most significant single factor in the prognosis is probably age; young adults do well, but with patients over 50 years the prognosis should be guarded, and in those (fortunately rare) cases above 60 the prognosis is not at all good.

DUE TO INFECTIVE FOCI

Most cases of anterior uveitis are probably due to infective foci of a mild or chronic nature in remote parts of the body. Proof of this is difficult, but the conception that a circumscribed area of infected tissue, itself giving rise, perhaps, to no symptoms, may be responsible for pathological processes occurring elsewhere, is corroborated by clinical findings on occasions so numerous wherein an infective focus has been established, and wherein the ocular symptoms have cleared up on removal of that focus, that it must be accepted as fact. The most common such foci of infection are the teeth, tonsils, nasal sinuses, the prostate and deep urethra, the colon, the urinary tract, the uterus, and the gall-bladder. Although the fact of focal infection must be taken as established, its mechanism is not yet clear. While it must be admitted that it is possible to produce an endocular inflammation by the lodgment in the eye of either bacteria or their toxins, there is also a considerable amount of evidence that allergic sensitisation of the ocular tissues may be a dominant factor in the occurrence, and especially the recurrence, of inflammatory conditions. By this means the tissues respond with an inflammatory reaction to bacteria, their toxins, or other foreign proteins when these are present in concentration so small as would excite no such response in the normal individual. In this event the stage is occupied, not so much by the bacteria, as by the local allergic state to which their presence has given rise. It follows that to determine a definite ætiology is often impossible; in the present state of our knowledge the most that can be done is to eliminate in so far as is practicable the most obvious source or sources, and to increase the resistance of the patient as much as possible by the judicious employment of autogenous vaccines.

The prognosis of such cases largely depends on the possibility of determining the ætiological factor, and of the practicability of eliminating this without lowering the resistance of the patient beyond the limits of safety. A search should be made to include the teeth, the tonsils, the nasal sinuses, the alimentary canal, the prostate, the cervix uteri, the urinary tract, and so on; but in the assessment of the importance of these it must be remembered that the removal of a particular focus, although it is frequently followed by a spectacular cure, cannot be relied upon to remove the source of infection in any particular case. More than one focus may exist simultaneously; a streptococcal infection may involve the teeth, the tonsils, and the colon, or two different types of infection may be firmly established in two different regions. In this way it is easy to fall into the error of over-enthusiasm, and there is no doubt that in recent years, partly through insufficient understanding of the causes of disease, partly through a desire to adopt some pragmatic and radical course of treatment, much unnecessary and mutilating surgery has been done in the wholesale removal of teeth, tonsils, appendices, and the rest, or in the scavenging of nasal sinuses, endometria, or colons. Time and time again we see patients on whom an enormous amount of radical surgery has been performed for the sake of an iritis which goes placidly on in complete disregard for the mutilation for which it is responsible.

It must never be forgotten, moreover, that the systemic expression of any infection is the result of the interaction between the infective focus and the patient. The resisting powers of the patient are as important in assessing a prognosis as are the activity of the infective micro-organisms; it is only after these have been evaluated by a detailed and broad medical examination that the wisdom or the necessity of radical methods of treatment can be foreseen. More especially is this so in those cases which show a multiplicity of possible foci. This factor of resistance is exceedingly obscure and difficult to assess; every human body each year and each day of life successfully copes with innumerable infections, and were it not for the vigilant activity of the forces of immunity no one would survive infancy. One patient may harbour many readily demonstrable sources of infection, each of them teeming with virulent organisms, and may escape systemic disease arising therefrom for an indefinite period; a second with a single minute focus may develop grave disturbances out of all proportion to the original cause. One patient on the removal of a focus may show a dramatic and immediate recovery; a second, in which equally conclusive evidence can be presented, shows little or no improvement and the disease slowly and indefinitely grumbles on. It is true that structural damage may have already occurred so extensive as to be beyond repair, but in other cases a chain of events seems to have been initiated in the eye which the person himself is unable to stop; the inflammatory process becomes a "habit" which the patient seems powerless to overcome, his fighting resources seem to have given up the struggle, and the disease becomes so firmly established as to continue independently of the primary focus, which, indeed, may have been without ætiological significance at the time of its elimination.

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POST-GRADUATE LECTURES

For the fifth week in succession we publish extracts from addresses delivered to old students in recent courses at the London teaching hospitals. Dr. Maitland-Jones spoke at the London, Dr. Hunt at St. Mary's, and Dr. Warner at Charing Cross Hospital.

SOME DISORDERS OF THE UPPER RESPIRATORY TRACT IN THE INFANT AND YOUNG CHILD

(DR. A. G. MAITLAND-JONES)

THE choice of my subject has been dictated by the fact that many disorders of this part of the body are common in the infant; furthermore, even if some of the conditions I propose to consider are rare, yet these latter include some of the gravest emergencies to be met with in the practice of pædiatrics.

Let me begin with nasal discharges. The most frequent cause of a nasal discharge in the infant is the "common cold." In the first few months of life a cold is apt to be a serious matter; not only does it produce gastro-intestinal disturbance, but also, owing to the fact that the posterior nares are relatively smaller in the infant than in the adult, the nose is easily blocked by hyperæmia and sucking is rendered difficult. The treatment of this nasal obstruction is gently to instil a few drops of oil into the nostrils before nursing; olive oil should be used rather than a mineral oil, as the latter if used in excess may set up a "lipoid pneumonia." In severe cases a few drops of adrenaline solution may be instilled just before nursing. Other causes of nasal discharge are nasal diphtheria and congenital syphilis; in both of these conditions the discharge is profuse and often blood-stained. In older children a one-sided nasal discharge should always suggest the possibility of a foreign body.

The next portion of the respiratory tract to be considered is the nasopharynx, and here one is faced with the vexed question of the value of tonsillectomy. I am very much of the opinion that far too many children have their tonsils removed and their naso-pharynx scraped for adenoids. Obstruction to respiration is a definite indication for operative treatment as is also recurrent otitis media and cervical adenitis, particularly when these conditions are associated with large and apparently unhealthy looking tonsils. Mere enlargement of the tonsils is no indication for their removal and I am somewhat sceptical as to the part alleged to be played in the production of disease in the child by "septic tonsils." As far as I am concerned, probably the best evidence of tonsillar infection is afforded by recurring attacks of acute tonsillitis; in a child subject to such attacks I would be prepared to consent to tonsillectomy. The removal of the tonsils for such conditions as recurrent colds, bronchitis, bronchial asthma, and acute rheumatism has given me such disappointing results that I always feel it my duty to point out to parents that tonsillectomy is by no means necessarily indicated in such conditions. In the acute glomerulo-nephritis of children, when the disease has followed on an attack of tonsillitis, I am of the opinion that tonsillectomy is of much value; in any such case if hæmaturia should persist for some time, say about six weeks, then I would have no hesitation in advocating tonsillectomy.

The next group of disorders I intend to discuss are those met with in the larynx or its neighbourhood; these are apt to produce difficulty in breathing, a difficulty which often results in stridor. I think it will be convenient if I take these conditions in relation to the age of the child. In the newly born there is the condition known as congenital laryngeal stridor; the infant has moderate inspiratory stridor, which is increased when he cries. This condition, which is not so uncommon, dates from birth and disappears towards the end of the first year. It is probably due to lax aryteno-epiglottidean folds which fall together on inspiration and produce the "purring" inspiratory stridor; no treatment is required for this disorder. Thymic asthma, due to an enlarged thymus pressing upon the trachea, is also alleged to occur in the first few weeks of life. I have never seen an example of thymic asthma and I never expect to see one as I, myself, suspect that this condition is one only to be found in text-books of pædiatrics. If an enlarged thymus should ever produce respiratory obstruction, a little consideration will show that the obstruction so produced ought to be noticed during expiration, giving expiratory stridor alone.

From about the sixth month to the end of the second year of life one meets with the retropharyngeal abscess of infants and laryngismus stridulus. The latter, characterised in the mild forms by a slight spasm of the larynx, produces "crowing" or slight inspiratory stridor; in the severe forms there is a period of apnœa, with or without cyanosis, which is succeeded by an inspiratory whoop; this disorder is a manifestation of tetany which in turn is a complication of rickets. It is more important to recognise laryngismus stridulus not only because on occasions sudden death has occurred in an attack, but also because it is amenable to treatment by calcium salts; the rickets underlying the tetany must also be treated both promptly and energetically. Retropharyngeal abscess in the infant may be confused with laryngeal diphtheria and in any infant with stridor a search is to be made to exclude a possible retropharyngeal abscess as the cause. Such an abscess has an insidious onset, but when fully developed it produces stridor, dysphagia, and extension of the head. On examination a mass may be seen, more often felt, on the posterior wall of the pharynx to one or other side of the middle line. Treatment is to open the abscess, as soon as softening is apparent, with a guarded knife; immediately the incision is made the infant should be inverted in order to prevent any inhalation of pus.

From the second to the fifth year of life catarrhal laryngeal spasm occurs. It is very remarkable that this disorder, once one of the most common of children's complaints, has become a rarity. I may briefly outline the clinical picture. A child develops a slight cold with a ringing brassy cough. Some time after being put to bed inspiratory stridor suddenly develops which passes off in an hour or so; on the following day the child appears to be well, but an attack usually occurs again both on that night and the succeeding night. Two points which I wish to emphasise are the sudden onset of the stridor and the fact that during the day the child appears to be reasonably well; these differentiate this condition from laryngeal diphtheria. Treatment consists in applying hot fomentations to the neck, a steam kettle, powdered ipecacuanha root in about ten-grain doses as an emetic, and a dose of an anti-spasmodic such as phenazone before the child goes to bed.

I must now consider briefly diphtheritic and catarrhal laryngitis, both of which produce difficulty in breathing; both have a gradual onset, and unless membrane is visible on the fauces the differential diagnosis between the two is often impossible. You will find in books various points enumerated to enable you to distinguish between them, but at the bedside you will often find it impossible to be sure. The attitude to be adopted is always to consider such cases to be diphtheritic and treat them as such with antitoxin unless you can prove them not to be so. In many cases even a negative throat swab would not deter me from giving antitoxin. Further causes of stridor are the inhalation of a foreign body and papillomata of the larynx; both these are uncommon, the latter particularly so.

Finally, with regard to this alarming symptom of stridor one may say in general that stridor during inspiration points to obstruction in the neighbourhood of the larynx, whilst expiratory stridor is suggestive of tracheal obstruction; in the latter case it is probable that tracheotomy will be of doubtful value. I may add that although there may be evidence of respiratory obstruction in retraction of the lower ribs and recession of the sternum, the idea of a tracheotomy should not be entertained unless stridor is present.

SOME DIETETIC DILEMMAS IN GENERAL PRACTICE

(DR. THOMAS HUNT)

ONE of the most difficult dilemmas is that of the patient who can't eat anything. I refer of course especially to functional vomiting, nervous dyspepsia and anorexia, and vomiting of pregnancy, but the same situation may arise temporarily in such conditions as cardiospasm, carcinoma of the œsophagus, and pyloric obstruction. The patient for example may be a young unmarried girl who has vomited intermittently for a long time and finally begins to vomit everything she takes. Usually there is pretty considerable loss of weight, as of appetite. She has very little pain, and clinical examination reveals nothing abnormal. If we press any special form of diet vomiting is likely to increase; if we withdraw all food there will be further loss of weight and still greater alarm of those around. For this state of affairs there are four remedies: (1) a good nurse and removal to hospital or nursing-home; (2) rectal feeding; (3) the stomach-tube or the threat of it; and (4) lastly but most important, the elucidation if possible of the psychological cause of the condition. As a rule if all *fluid* and food is stopped by mouth for one, two, or three days the patient will soon tire of the régime; but water must be included in this veto, for the restriction of drinking will do much to force the patient to try to get back to normal diet.

During this time rectal feeding must be carried out. The only things appreciably absorbed per rectum are water, salts, glucose, alcohol, and certain drugs. So that if we order 8-oz. salines every four hours containing 1 oz. of glucose, ½ oz. of brandy, and grs. 20 of bromide, we are supplying daily 2½ pints of water, about 1000 calories, and 2 drachms of sedative.

Another serious dilemma connected with vomiting often arises after hæmatemesis. Here we may be dealing with a desperate situation. The patient has perhaps lost a lot of blood from a bleeding ulcer. If we give him too much food he may bleed again; if we starve him too much he stands little chance of re-forming blood and regaining strength. Of these two dangers the second is, in my opinion, at least as great as the first. In spite of the general optimistic view of the prognosis in hæmorrhage from peptic ulcer I am sure there is a considerable risk of death from exhaustion, anæmia, and toxæmia from the altered blood in the intestine, if food is withheld too long. The older the patient the greater is this risk and the shorter should be the period of starvation; for though the old are said to stand starvation much better than the young, in my experience they stand anæmia plus starvation a good deal worse. Even if the hæmorrhage is repeated—as indeed it very often is—it is running a grave risk to starve the patient longer than two to three days. In general I think it wiser to give 2-oz. or 3-oz. feeds, half milk and half water, at the end of 12 hours from the last hæmorrhage than to persist longer with plain sips of water or albumin water. At least we can safely add from the start lactose or glucose to the latter, up to ½ oz. per feed, unless the patient much dislikes sweet drinks. In one of the severest cases of hæmatemesis I have seen the patient was inadvertently given almost a normal diet, with chicken, potatoes, bread and butter, pudding, and tea on the third day; yet he never looked back and was fit for operation and resection of a large gastric ulcer inside ten days! On the other hand, I have known several die from recurrent hæmorrhage after it had been thought too dangerous to give them anything but water. Abroad E. Meulengracht (1933) has reported on 119 patients treated for hæmatemesis to whom he gave immediately a diet of tea, cocoa, bread and butter, porridge, meat, fish, eggs, vegetables, and fruit. Only 5 died, of whom 2 had carcinoma of the stomach and 1 Banti's disease. I have not dared recommend such revolutionary treatment, but I feel convinced that the risk of giving milk, eggs, malted foods, and glucose quickly after gastric hæmorrhage is far less than that of withholding food until the patient is exhausted from hunger and starvation. It is with such starvation that mental symptoms and restlessness are so liable to develop.

If then we must choose between the risk of further hæmorrhage and the risk of prolonged starvation let us err on the side of risking further hæmorrhage. It is often during this period that we are warned of the danger of transfusion, again because of the risk of provoking further hæmorrhage by raising the blood pressure too high. In my experience this seldom happens, and indeed observation has shown that the rise of pressure after a full transfusion is rarely as much as 10 mm. Hg and seldom persists of itself more than 10–30 minutes. The greater risk, if there is one, is of œdema of the lungs following a transfusion given too quickly or in too large amount; but if one is faced with a patient desperately ill from hæmorrhage, there should be no hesitation in giving the transfusion.

In less serious cases of nervous indigestion we often have to decide whether to recommend a full diet, with the assurance that discomfort is to be ignored, or to rest the stomach and try gradually to build up a diet by cautious addition of increasing quantities and variety. In deciding this one of the most important factors is the length of history. As a rule only in the very recent case can we hope to succeed by the first method. If the indigestion is at all long-standing there is apt to be a secondary mucous gastric catarrh, and the stomach can only be re-educated to take a full diet by the gradual removal, through cautious diet, of the indigestion habit.

For this purpose diet along the lines employed for peptic ulcer is usually satisfactory. Here again

we must aim particularly at being consistent. Regularity of feeds, small amounts at a time, but also sufficient caloric intake, are to be aimed at. In such cases malted food drinks, Benger's food, and the like are valuable, with the addition of cream, glucose, toast, and eggs to increase the energy value. Often these patients are advised feeds like meat broths and extracts, but it must be remembered that nearly all these "meat juices" are of almost no energy value. Their main constituent is common salt, together with some extractives, and they contain hardly any true protein or fat and no carbohydrate at all. If patients are only able to swallow a little (as for instance in cardiospasm or carcinoma of the œsophagus), let us at least give them fluid feeds as concentrated as possible. The white of one egg contains as much protein as about three teaspoonfuls of any meat extract and any number of teaspoonfuls of calves-foot jelly—at anything from a quarter to a twentieth of the price. If we are faced with those difficult people who cannot take milky foods we can give them enough calories by using the white of three eggs mixed in about 6 oz. of water flavoured with Lemco, Marmite, or Bovril, or they may take a purée vegetable soup to which we can easily add 3 oz. of cream and three teaspoonfuls of sugar and flavouring and thereby provide some 600 calories of energy. Some such substitute is very valuable to replace the almost valueless mutton and chicken broth so often offered to the sick—especially by anxious parents.

In the old, anorexia and vomiting may become very urgent and serious symptoms. Senile anorexia is apt to follow the administration of drugs such as digitalis or salicylates or morphia, and is best treated by immediate cessation of all drugs by mouth, one or two days of rectal feeding, and the institution of tiny feeds of 2 oz. egg and milk every two hours if they can be taken. Where even this is refused it may be necessary to give only occasional sips of water by mouth and rely on rectal and if necessary intravenous feeding with salines and glucose. In many old people almost any illness is liable to be associated with a psychological loss of appetite—and a refusal of food in almost any form—even though they may realise the seriousness of their behaviour. It is a lack of any will to eat. If there are any particular individual items that the patient thinks she would like it is nearly always wise to gratify the inclination; if not we must rely to a large extent on rectal feeding and trust that the appetite will return.

Another common dietetic dilemma has to do with high blood pressure. Here our problem is to estimate not only the significance of the raised pressure but also the make-up of the people who have it. I say this because a large proportion of them are of the nervous frightened type, and any form of treatment must take this into account. As has been pointed out by many observers, the symptoms often found in association with a high blood pressure are strikingly like those found in cases of anxiety neurosis—exhaustion, headache, poor appetite, giddiness, insomnia. There is also no doubt that many of the symptoms of many patients with high blood pressure are in fact purely nervous, and that any measure which increases alarm, fear, introspection, or anxiety tends both to increase the symptoms and to raise the pressure. Hence before insisting on any rigid dietary rules we must carefully weigh up the nervous aspect of the case and the effect that any prolonged restrictions may have in fixing the patient's mind upon his condition, and increasing his anxiety. And before we give any strict dietary advice we must be sure that it is necessary and likely to be of real benefit.

The two main things we have to consider are meat and alcohol. Are we to eliminate all protein from his diet? The restriction of meat to once a day is easily compatible with a cheerful outlook on a day's menus, and this is probably a wise injunction. How it is cooked and whether it is red or white matters little except from the digestive point of view—and I know of no good evidence that red meat is actually more harmful in high blood pressure than white. Cooked rabbit for instance contains slightly more protein than cooked beef, and chicken almost exactly the same as beef or mutton though rather less than veal—which after all is only white meat because the animal has been bled to death instead of being killed outright. Liver, kidneys, and sweetbreads contain rather more nuclein (which forms uric acid) than other meats, but not greatly increased amounts of extractives, which indeed are rather diuretic than otherwise. As for fish, it mostly (except for salmon) contains rather less fat than meat, and some stomachs find it easier to digest; but it is quite erroneous to substitute it for meat with the idea of much reducing the protein intake. Moreover there is another important aspect of this question to be considered—namely, the undoubted effect on some people of a severely restricted animal protein diet in appearing to lessen their energy and spirits. This depressant effect—psychological though it may be—is often to be seen in the prolonged treatment of peptic ulcer, where all meat is excluded and where definite deficiency symptoms occasionally arise in the form of neuritis, skin changes, and mental depression, these being akin to true pellagra which is almost certainly due to vitamin and amino-acid deficiency. A useful addition to the diet, where animal protein has to be much reduced, is a yeast preparation such as marmite, though its actual energy value is small.

Yet another difficulty that arises is in the effect of obesity and flatulence upon the heart and blood pressure. Many subjects of cardiac asthma and angina have their attacks provoked by distension of the stomach or splenic flexure with gas under the left diaphragm, and many are much overweight. In such cases flatulence is to be avoided, and if possible the weight should be reduced. For these patients restriction of meat with free allowance of carbohydrates is contra-indicated and it is better to treat the digestion than the blood pressure. It is therefore wise to order a diet low in bread, puddings, starchy foods, and roughage; and to allow meat, fish, and eggs in normal amounts. Especially also to order small meals, thorough mastication, and a reduced fluid intake with food. Most of the post-prandial distension which may be an important exciting factor of heart pain or dyspnœa is probably due either to failure of the pyloric end of the stomach to relax completely on the entrance of food, so that the cardiac end becomes blown out with air, or to frank air-swallowing, or to undue carbohydrate fermentation in the colon. Slowly eaten, small dry meals are the best preventive of the former, and a low cellulose and carbohydrate diet of the latter.

In such flatulent patients meat is usually quite well taken, and should be undercooked rather than overcooked; tea on the other hand has a very bad reputation for increasing distension and there is some evidence that it may retard digestion in the stomach and delay its emptying-time. According to experiments coffee is less of an offender, and in practice it is often better tolerated than tea; but both of them are bad if taken in at all large amounts

with food. On the other hand, a small quantity of wine seems often beneficial.

In flatulent constipated subjects we have this dilemma: if we increase the roughage and starches we increase their flatulence; if we reduce it they will say we increase the constipation. Actually there is less residue to be passed on a low roughage diet and we can safely reassure our patients that fewer actions of the bowels will not necessarily be of serious consequence and will be compensated for by the diminished production of gas in the colon.

In general therefore let us diet our high blood pressure patients with our eye as much on their state of mind, digestion, and body-weight, as on the height of the pressure itself.

THE THERAPEUTIC VALUE OF GLUCOSE

(DR. E. C. WARNER)

GLUCOSE is used so universally for so many different complaints that it is well to have in mind some of the main indications for it. In therapeutics it has many valuable properties: it is pleasing to take, in lemonade or otherwise; it is readily absorbed, requiring no digestive activities; it is readily stored in the body either for immediate use or for subsequent supply from the storehouse in the liver; and in preparation for tissue metabolism, unlike fats and proteins, it makes no demand on the metabolic functions of the liver. It is easily utilised by the tissues, and in general carbohydrate is the food which is first called upon for metabolic purposes. Its last important property is its power to combat ketosis.

Glucose may be administered either by itself or in association with insulin; the latter tends to enhance its usefulness, for it allows of greater storage in the liver and it may help subsequent metabolism as a whole. Its main uses fall into five categories, as follows.

Conditions associated with ketosis.—In giving glucose in cases of diabetic coma with ketosis, there are several different schemes of treatment: for example, Dr. Lawrence advises giving 40 g. of glucose and 40 units of insulin and repeating half these quantities each two hours until consciousness returns. We must not lose sight, however, of the value of other measures. Perhaps the next most important is the administration of large doses of saline to combat the dehydration, and with this in mind F. B. Byrom has recently suggested that as soon as a severe case is seen, 50–100 units of insulin and a pint of normal saline should be administered very slowly by the intravenous route. At the same time he advises that 500 g. of glucose should be dissolved in two litres of 0·45 per cent. saline, and this should be given in 24-hourly doses by mouth, together with further insulin (10–20 units hourly) until the blood-sugar is normal.

In surgical conditions too the use of antiketogenic measures may be of importance. From studies of the abdominal pain in cases of ketosis in children we have come to realise that there is a condition sometimes termed the "diabetic abdomen." A patient I have lately seen was a man with vague but severe pain in the right upper abdomen which could not be located to any organ; there were no physical signs, and investigations had proved negative. On routine examination it was found that he was passing considerable amounts of sugar and ketone bodies in the urine, and within a short time of instituting measures to combat the diabetes the abdominal pain disappeared completely. Sometimes in these cases it is hard to make a differential diagnosis from an acute abdominal condition, and the difficulty is all the greater because both groups show a leucocytosis. Here it is wise to treat the patient with vigorous antiketogenic measures for two or three hours, within which time a "diabetic abdomen" will have largely subsided.

Cyclical vomiting is yet another example of a condition which is frequently associated with ketosis. It is quite true that there are other allied conditions which do not necessarily manifest themselves in the form of vomiting, and perhaps it is better on the whole to give this group of cases the name of glycopenia, meaning a probable deficiency of glycogen in the liver. We all are familiar with cases of the thin, nervous child with poor muscle tone, who may manifest the tendency in many different ways, ranging from cyclical vomiting and cyclical diarrhœa to nocturnal enuresis. The response to the administration of extra sugar is often very striking, and the way in which these children will then start to put on weight is equally pleasing. It is true that sugar in any form is probably of equal benefit, but it is often difficult to get it given regularly unless it is ordered in the form of medicinal glucose.

Two other types of vomiting and ketosis which respond to glucose therapy are hyperemesis gravidarum and post-anæsthetic vomiting. For the former it has therefore been advised that 1–2 pints of 10 per cent. glucose should be administered intravenously in three divided doses and this should be combined with 5–10 units of insulin t.i.d. To correct post-anæsthetic vomiting it is now a routine procedure with most surgeons to give sufficient glucose beforehand, but should the vomiting become persistent in spite of this, the condition may be treated in the same way as hyperemesis gravidarum.

Closely allied to these ketotic states are those which are associated with *liver disease*. It is well known that the liver cells are protected by having a good store of glycogen, and that in its absence toxins of various kinds will lead to autolysis. Protection of the liver with glycogen should therefore be sought in conditions ranging from "acute yellow atrophy" or acute hepatitis of other kinds, such as that of eclampsia or poisoning by chemicals, to the more chronic states of cirrhosis. Richter has reported the use of 1 oz. of glucose t.i.d. (with or without insulin) and in general this is the procedure which is usually adopted. Apart from its therapeutic value to the liver, the relief of pruritus which this gives is often gratifying to the patient.

In *allergic conditions* glucose has proved its value. The milder cases of asthma in children often respond completely to glucose therapy, although severe cases are much less prone to do so. In general it is the allergic type which benefits most, but this is not necessarily true and it is well worth trying it in any case of juvenile asthma. In adults asthma is usually not benefited. Not long ago I had a case of a young man who gave himself a pound to a pound and a half of glucose a day, having read of its value in children. He temporarily cured his asthma, but unfortunately rendered himself a diabetic.

The recurrent type of giant urticaria is another allergic state which may respond very well. My attention to this was first called by seeing two children with cyclical vomiting who had giant urticaria with each of their attacks. When glucose was given for the cyclical vomiting the giant urticaria also subsided, but it recurred again when this was omitted. Since then I have used glucose in children and in adults in some ten cases of recurrent giant urticaria with

gratifying results. It is not necessary to administer it continuously. I think the best plan is to give an ounce of glucose three times a day for about a fortnight, and then subsequently, if attacks tend to recur, 1 or 2 oz. of glucose directly an attack threatens. This will generally be found to abort it. Finally in infantile eczema we have another group of allergic cases which has been reported by A. A. Osman as responding to glucose therapy.

The fourth use of glucose, in combination with insulin, has been to *increase the weight* of patients. In simple emaciation a gain in weight will often lessen the nervousness of patients and increase their resistance. Often the digestion is poor, and so the fact that no digestive activity is required is of considerable value. It is usual to give 5–10 units of insulin a quarter of an hour to twenty minutes before the two chief meals of the day, and the lowering of blood-sugar which results stimulates hunger pains. If glucose is given in quantities of 1 oz. after the same meals it will not decrease the appetite, and if this is persisted in over a period of weeks, it is seldom difficult to get a considerable increase in weight. A similar régime is of value in primary thyrotoxicosis, where usually rather larger quantities of insulin, such as 10 units increasing slowly to 20 units, three times a day before meals, with glucose after meals, will have a similar effect. This is of particular value in acute post-operative intoxication of the heart muscle, when resort to intravenous glucose combined with insulin may tide the patient over a difficult period. Again, in rheumatoid arthritis where failure of nutrition is often an important factor, F. D. Howitt and others have proved the advantage of this form of therapy. And yet again, in marasmus in children, the work of H. L. Marriott in particular has shown how one or two units of insulin twice daily, combined with 2 to 3 oz. of 5 per cent. glucose, also twice daily, administered if necessary by intraperitoneal, subcutaneous, or intravenous methods, will often lead to gain in weight which it has been very difficult to obtain otherwise.

In the acute forms of *heart disease*, especially when myocarditis is a feature, the strength of the cardiac contractions is almost certainly increased and the general condition of the heart muscle improved by glucose and insulin therapy, and this treatment has been put on a sound basis by physiological research.

Glucose can be given by almost any route. By mouth it is usually well tolerated and we can give enormous doses, for E. C. Dodds has shown that normal people can tolerate and utilise nearly a pound a day without getting glycosuria. Per rectum it is one of the few drugs that is absorbed in ready fashion. Intravenously a 5 per cent. solution is isotonic with the blood plasma, and if given slowly, a pint can easily be administered at a time. Intraperitoneal medication has not been given the support it deserves. It has long been known that sterile glucose solutions are somewhat irritant to the peritoneum, but if the glucose is sterilised in the dry state and added to sterile water just before use, irritant chemical compounds are no longer produced. The subcutaneous route has not found favour, because of the slow absorption of the sugar and the subsequent tendency to infection, but it will sometimes permit the administration of small quantities of glucose to babies when it would be hard to give it in any other way.

DONATIONS TO HOSPITALS.—Mr. E. W. Meyerstein, who recently wiped off the debt on the Middlesex Hospital with a cheque of £85,675, has now, with a gift of £5000, enabled the new Queen Victoria Cottage Hospital at Tonbridge to be opened free from debt.

P.R. AT DENTAL BOARD ELECTIONS

ON Oct. 2nd Mr. C. F. Rilot, M.R.C.S., L.D.S., and Mr. J. A. Woods, M.D.S., took their seats at the Dental Board of the United Kingdom representing the 6532 qualified dentists practising in England and Wales. At the election in June five candidates were duly nominated for the two seats: Mr. W. R. Ackland, M.D.S., Mr. W. H. Dolamore, M.R.C.S., L.D.S., Mr. W. H. Gilmour, M.D.S., Mr. Rilot, and Mr. Woods. Sixty-four per cent. of the constituency voted and each voter had one transferable vote. Mr. A. G. Gray, an officer of the Proportional Representation Society, superintended the sorting and counting of voting papers.

The valid voting papers were sorted and counted according to the first preferences recorded for each candidate, with the following result:—

Rilot	1393
Woods	1186
Gilmour	470
Ackland	412
Dolamore	397
	3858

The quota, that is to say the number of votes sufficient to secure the election of a candidate, was 1287, and Mr. Rilot, having secured a number of votes greater than the quota, was thereupon elected. His surplus votes (106 in number) were transferred to the continuing candidates for whom the next available preferences had been recorded on valid papers recording a first preference for him, with the following result:—

Woods	1276
Gilmour	474
Ackland	416
Dolamore	405
Retained for Rilot's quota ..	1287
	3858

No continuing candidate having obtained the quota, Mr. Dolamore was excluded from the poll and his transferable papers were credited to the continuing candidates for whom second preferences had been recorded on them. The result was as follows:—

Woods	1369
Gilmour	566
Ackland	549
Retained for Rilot's quota ..	1287
Non-transferable	87
	3858

Mr. Woods, having at the end of this count secured a number of votes greater than the quota, was thereupon elected. The details of procedure are shown in the following Table:—

Number of valid votes, 3858. Number of members to be elected, 2.

Quota $= \frac{3858}{3} + 1 = 1287$.

Names of candidates.	1st count. Votes polled by each candidate.	2nd count. Transfer of surplus votes of Rilot.	2nd count. Result.	3rd count. Transfer of votes of Dolamore.	3rd count. Result.
Ackland ..	412	+ 4	416	+133	549
Dolamore ..	397	+ 8	405	—405	—
Gilmour ..	470	+ 4	474	+ 92	566
Rilot ..	1393	—106	1287	—	1287
Woods ..	1186	+ 90	1276	+ 93	1369
Non-transferable papers				+ 87	87
Totals ..	3858	—	3858	—	3858

Elected candidates: Rilot (1st); Woods (2nd).

SPECIAL ARTICLES

EPIDEMIC CATARRHAL JAUNDICE

NOTES ON A DEPARTMENTAL OUTBREAK

BY H. H. BASHFORD, M.D., M.R.C.P. Lond.
CHIEF MEDICAL OFFICER, GENERAL POST OFFICE, LONDON

VARIOUS outbreaks of non-leptospiral epidemic jaundice have been recorded and investigated, both in this country and abroad, during the last few years; and a considerable literature has been assembled. A group of village outbreaks in the Midlands was investigated in 1927 by M. T. Morgan and H. C. Brown. Outbreaks in Surrey in 1928, 1930, and 1931 were reported upon by W. G. Booth and C. C. Okell, and G. M. Findlay, J. L. Dunlop, and H. C. Brown; in Yorkshire in 1930 by W. N. Pickles; and an extensive epidemic affecting three West Country schools was described in 1931 by J. A. Glover and Joyce Wilson.

In all these epidemics the vast majority of patients were school-children, and recovery without any apparently remaining ill-results was the rule. Clinically there was a more or less constant preliminary stage of malaise or feeling of chill, often but not always associated with pyrexia, accompanied or followed by abdominal discomfort, nausea, vomiting, and the ultimate appearance of jaundice, with characteristic clay-coloured stools and dark pigmented urine. Recovery from the subsequent weakness was often slow but usually complete in from six weeks to two months after the onset of the complaint, and in many cases much sooner. In none of the outbreaks could any relation be established with responsible conditions affecting either foodstuffs or water; with infection from rodents, particularly the rat, associated with the severer, leptospiral form of jaundice known as Weil's disease; or with the organisms responsible for typhoid or paratyphoid fever, in which jaundice is sometimes a feature. On the other hand, no causal organism has been discovered; the means by which the infection is spread, if at all, from person to person has not been determined; and estimates of the probable incubation period have varied from three or four days to a month.

It is for these reasons, and because it had certain features differing somewhat from those of previously recorded outbreaks, that the following notes of a recent departmental outbreak are perhaps worth reporting.

In the daily review of sick certificates submitted from so large a staff as that employed in the various great central departments of the General Post Office, catarrhal jaundice is not uncommonly met with; and it was not immediately evident, therefore, that we were in the presence of a definite if small epidemic. Towards the end of June, 1934, however, it became clear that an unusual number of such cases was being reported from one particular department, and ultimately, between June 18th, 1934, and July 18th, 1934, 48 cases occurred; 43 of them were members of a total staff of approximately 1900, employed in four different rooms, each upon a separate floor in the same building. Two occurred in a departmental school in another part of London to which, however, the patients had been transferred from these rooms, on June 9th and 23rd respectively. Three occurred in employees not habitually using this building, but taking meals in its common dining-room.

The accompanying Table shows the incidence of events. There would seem little doubt, therefore,

The Cases in Chronological Order

No.	Initials.	Age.	Date of sick absence.	Room and floor of employment.	Onset of jaundice after first feeling of illness.
1	Mr. F. A.	24	June 18.	W. 3rd.	9 days.
2	Miss E. M.	20	„ 19.	„	6 „
3	„ B. M. A.	26	„ 19.	Y. 1st.	No record.
4	„ E. J.	17	„ 19.	W. 3rd.	7 days.
5	„ K. E.	25	„ 20.	„	7 „
6	„ B. H.	16	„ 21.	„	3 „
7	Mr. W. V.	36	„ 21.	Z. 2nd.	No record.
8	Miss J. M.	17	„ 23.	X. 4th.	8 days.
9	„ A. M.	16	„ 25.	W. 3rd.	4 „
10	„ E. J.	16	„ 25.	„	4 „
11	„ J. E.	15	„ 25.	„	7 „
12	Mr. M.	37	„ 25.	X. 4th.	3 „
13	„ W. N.	34	„ 25.	„	No record.
14	Miss R. A.	24	„ 26.	W. 3rd.	4 days.
15	„ M. A.	16	„ 26.	„	3 „
16	„ C. L.	17	„ 28.	X. 4th.	6 „
17	„ A. R.	17	„ 28.	Dl. S.	4 „
18	„ J. E.	15	„ 29.	W. 3rd.	6 „
19	Mr. A. T.	32	„ 29.	Z. 2nd.	4 „
20	„ H. W.	26	„ 29.	—	3 „
21	Miss P. M.	22	„ 30.	Y. 1st.	No record.
22	„ J. B.	17	„ 30.	—	6 days.
23	„ J. C.	16	„ 30.	—	No record.
24	„ D. M.	16	July 2.	X. 4th.	4 days.
25	„ M. J.	16	„ 2.	W. 3rd.	7 „
26	„ R.	16	„ 2.	„	8 „
27	Mr. S. H.	17	„ 2.	Z. 2nd.	No record.
28	Miss K. M.	14	„ 2.	W. 3rd.	4 days.
29	„ E. E.	21	„ 2.	Y. 1st.	No record.
30	„ M. R.	24	„ 2.	„	„
31	„ L. R.	23	„ 2.	„	4 days.
32	„ S. W.	15	„ 2.	W. 3rd.	8 „
33	„ J. E.	17	„ 3.	„	No record.
34	„ V. G.	22	„ 3.	X. 4th.	2nd week.
35	„ E. F.	16	„ 3.	W. 3rd.	3 days.
36	„ D. M.	17	„ 3.	—	2nd week.
37	„ K. W.	14	„ 4.	W. 3rd.	10 days.
38	„ E. M.	17	„ 4.	X. 4th.	2 „
39	„ J. A.	25	„ 5.	Y. 1st.	4 „
40	„ S. M.	22	„ 6.	„	No record.
41	„ J. J.	17	„ 6.	W. 3rd.	4 days.
42	„ G. M.	17	„ 6.	Dl. S.	No record.
43	„ C. B.	29	„ 6.	W. 3rd.	„
44	„ J. M.	17	„ 7.	„	At once.
45	Mr. H. W.	25	„ 9.	„	3 days.
46	Miss M. G.	16	„ 13.	„	3 „
47	„ A.	22	„ 14.	Y. 1st.	No record.
48	„ A.	16	„ 18.	W. 3rd.	„

Dl. S.—Departmental school.

REMARKS

No. 1.—First felt ill on June 9th, but continued at work till jaundice appeared on June 18th.
No. 4.—Was taken ill while on holiday leave. Had not been to the office since June 11th. Only contact occasional visits from Miss L. M. (see reference in text).
No. 17.—Transferred to school on June 23rd.
No. 20.—A workman employed variously in all the affected rooms.
Nos. 22, 23, and 36.—Not employed in the building, but using its common dining-room.
No. 31.—Had been previously away ill from June 17th to June 20th with a cold in the head.
No. 42.—Transferred to school on June 9th. Began to feel ill on June 30th, but remained at work till July 6th.

that an epidemic of catarrhal jaundice had in fact occurred. No earlier cases have been traced that appear to have any connexion with it. No others were reported during its incidence from any of the large contiguous departments and buildings of the General Post Office, and there has been no subsequent evidence, either in this department itself or in any of the others, of further cases of the same nature. When it seemed clear that the epidemic was in progress, a careful inspection of the affected rooms and of the common dining-room and kitchens was made in conjunction with Dr. M. T. Morgan, of the Ministry of Health, who had investigated previous epidemics, but no responsible *per se* factor in the ventilation or sanitation of the rooms themselves, or of the food or water used in the dining-rooms,

could be established; and indeed such factors seem to have been eliminated in the investigation of earlier and similar epidemics. Moreover, of the persons affected, 11 never used the dining-room at all, either bringing their own food or taking their meals elsewhere, while 3 were not employed in the building and merely used its common dining-room for their meals. Since the affected persons lived in widely scattered parts of London and its outlying suburbs it was further considered advisable to inform the medical attendant of each of the probable nature of the jaundice being suffered from; and subsequently each case was visited by a medical officer from headquarters. In no case, however, did any domestic infection occur either before or after the medical attendants were so informed.

Clinically the epidemic appeared to be little different from those previously recorded. There was a history of pyrexia in 8 of the cases, and of initial chill and catarrh in 12; 9 complained of headaches, 16 of nausea, and 31 of vomiting. In 30 cases the urine had been noticed as exceptionally dark, and in 38 cases clay-coloured stools had been observed. Jaundice, more or less deep, was present in all. All made a good eventual recovery.

With regard to the incidence and possible incubation period it will be seen that the first recorded case, Mr. F. A., was on duty while feeling ill from June 9th to 18th, when jaundice appeared and he went on sick leave; and it seems possible, therefore, that during that time he may have been an unconscious source of infection; and there were two days—i.e., between June 9th and 11th—when Miss E. J., working in the same large room, but in another and distant part of it, might have received, though only in the most casual act of possible passing, some air-borne or droplet infection from this source. Miss E. J., however, went on holiday leave on June 11th and did not become ill until the 19th, the jaundice not appearing till the 26th. Her only contact with the office between June 11th and 19th was in the occasional visit to her of Miss L. M., employed in the building, but herself only occasionally entering two of the affected rooms. Miss L. M., who remained throughout in perfect health, was examined and a nasopharyngeal swab was kindly reported upon by Dr. A. Q. Wells, of the clinical research department, St. Bartholomew's Hospital. This revealed very few organisms, mostly Gram-positive cocci by direct film, no spirochætes by dark ground, no diphtheria bacilli on serum slope, and an almost pure growth on blood-agar of streptococci attributed to the *salivarius* rather than the *pyogenes* group as the result of subsequent tests. Miss L. M. had been transferred to the departmental school above-mentioned during the course of the outbreak but subsequent to the occurrence of the two cases there; and no others occurred after her transference there. Unless Miss L. M. is to be regarded, therefore, as having been a carrier, though herself unaffected by the epidemic, it would appear that the incubation period in the case of Miss E. J. must have been at least eight days.

Difficulty was experienced in obtaining stools, urine, and blood for bacteriological examination at the appropriate periods. But four specimens of urine and fæces were secured and six specimens of blood, which were kindly examined by Dr. W. M. Scott at the pathological laboratory of the Ministry of Health. No evidences of leptospiral or typhoid or paratyphoid infection were found, and the only possible significant feature as regards the stools was the presence in two of them of one particular sero-logical type of Morgan's bacillus, which is probably pathogenic, but does not appear hitherto to have been associated with jaundice; and all the six blood specimens were found to agglutinate this. It must be added, however, that 10 out of 20 apparently normal human sera were found to agglutinate this to almost the same extent.

The serum from five of these bloods, which were kindly tested by Dr. J. Smith of the City Hospital, Aberdeen, gave negative results when Schuffner's test for agglutination of *Leptospira icterohæmorrhagiæ* and *L. canicola* was applied.

From an epidemiological standpoint the following points seem to be of interest. The workers in only four rooms were affected, although there are many other rooms in the same building whose occupants would meet those of the affected rooms in lifts, corridors, and the dining and retiring rooms. Nor did any of the sufferers convey the disease to their home circles. On the other hand, no common responsible factor applicable to these rooms and the 48 sufferers could be isolated. A person-to-person spread of the infection would seem to be the most probable explanation, but it could only have been the result, in at any rate a large number of the cases, of the most casual contact. Nor could the infection, in view of the large number of possible victims, have been other than of a relatively low degree of virulence. It also seems probable that the period of personal infectivity was comparatively brief, and perhaps extremely so. Finally the epidemic differs, to some extent, from most of those previously reported in having been wholly confined to adolescents and adults.

I must add my thanks to Dr. A. T. G. Thomas, of the headquarters medical staff of the General Post Office, and to Dr. W. A. R. Mailer for their help in collecting and correlating the relative clinical data.

MEDICINE AND THE LAW

Inquest Verdict as Evidence of Murder

THE findings of a coroner's jury are not conclusive findings of facts for the purpose of other courts. A finding of negligence against a motorist, for instance, if given at an inquest, cannot be relied upon as an established cause of action for damages in a civil court. And yet sometimes the High Court will act upon the verdict of a coroner's jury even where rights of property are in issue. Thus a few weeks ago Mr. Justice Clauson accepted the finding of a coroner's jury that a man named Sigsworth had murdered his mother and had afterwards committed suicide. The question in the Chancery Division was whether the son could profit by the mother's will after having murdered her. The son himself was dead, but there were legal representatives of the son whose claims were in question. There was ample authority for the rule that the murderer could not profit by his own felony and could not pass to his legal representatives rights which he himself was not entitled to take. The son had been entitled to the mother's residuary estate under her will. If the son could not receive this bequest, the mother died intestate in respect of her residuary estate. This raised another question for the court about which there was a doubt; could the murderer, though not entitled to property under his victim's will, nevertheless share in the victim's estate on an intestacy? Mr. Justice Clauson decided that the same rule of public policy which would exclude

the murderer in the one case must also exclude him in the other. To go back for a moment to the admissibility in evidence of an inquest verdict, Mr. Justice Joyce seems to have been willing to accept the verdict of the coroner's jury as prima facie evidence of the fact of murder in *re* Houghton some 20 years ago. Earlier still, in the litigation arising out of the Rugeley poisoning cases the Master of the Rolls took the same course.

Murder for Gain

Palmer's poisonings at Rugeley—some 16 deaths were attributed to him—present a classic example of murder for profit. Apart from Cook's death, which brought him to the gallows, Palmer had insured his wife for £13,000. She died within three months of "bilious cholera." He insured his brother Walter for £13,000 after abortive proposals for as high a sum as £82,000. Walter Palmer died not long after. The insurance companies refused to pay on Walter's death and raised a defence fund. Eventually, when the policy came before the courts, it was declared fraudulent and void and the Master of the Rolls ordered it to be cancelled. Palmer's murders have reminded criminologists of the earlier series of poisonings by Wainewright, the art critic, who was transported for forgery in 1837. In 1828 Wainewright and his wife went to live with Griffiths, a bachelor uncle. The uncle died suddenly and the nephew inherited the property. Wainewright persuaded his mother-in-law and his two half-sisters to share the home. The mother-in-law, obstructive to his plans, died suddenly. He insured Helen Abercromby, his half-sister, for £5000 over a short period. She died suddenly within a few months. The symptoms of all three deaths were similar. Wainewright had to sue the insurance company for non-payment on Helen's death. The jury disagreed but at a re-trial there was a verdict for the company. Wainewright, a whimsical fellow, is said to have tacitly admitted, while in Newgate, that he poisoned Helen—"she had such thick ankles."

The Case of Sidney Harry Fox

The most neatly timed murder for profit must surely be that committed in 1930 by Sidney Harry Fox, whose trial has lately been admirably edited by Miss Tennyson Jesse in the Notable British Trials series.[1] Like the dead man in the case lately before Mr. Justice Clauson, Fox murdered his mother. He had no money; he had been obtaining cash by a bogus cheque which was likely to be brought home to him soon. He owed debts to several hotels where he and his mother had resided. He insured his mother for £3000 which he would receive (as she had made a will in his favour) if she died a violent death before midnight on Oct. 23rd. She was not a strong woman. He put her to bed, at the Margate Hotel where they were staying, at 9 P.M. on Oct. 23rd, giving her some port wine. He came down to the hotel bar for a drink and went upstairs again at 10.40, leaving himself 80 minutes if the death was to take place and be duly discovered before midnight so as to be within the insurance policy. At 11.20 he ran downstairs in his shirt, giving an alarm of fire. His story was that he had been in bed and asleep when he was waked by a smell of smoke; he had opened the door of his mother's bedroom, found the room full of smoke, and—a fatal admission—closed the door again before running downstairs for help. There was a lighted gas stove in Mrs. Fox's room and a fire had started on the carpet under a blazing armchair but there was a strip of unburnt carpet between stove and armchair. Sir Bernard Spilsbury's evidence, resisted by experts called for the defence, was that Mrs. Fox was dead before the fire caused the smoke and that, in spite of the absence of such signs as the fracture of the hyoid bone, she had been throttled to death. No one in the hotel knew at the time that Fox was other than a good and devoted son. But the alertness of the insurance officials led to inquiries which ended in his prosecution and conviction for murder. His is one of the rare cases where there was no appeal from the death sentence. Fox presumably had not foreseen the legal difficulties raised by insurance companies in suspicious circumstances. In litigation which followed another famous trial (the Maybrick case) Lord Justice Fry laid down the rule of public policy that courts will not enforce rights asserted by a criminal and arising from his crime. As Lord Sumner said on another similar occasion, "a man shall not slay his benefactor and thereby take his bounty."

[1] Trial of Sidney Harry Fox. Edited by F. Tennyson Jesse. Edinburgh and London: Wm. Hodge and Co., Ltd. 1934. Pp. 299. 10s. 6d.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Lts. D. Ewart to R.M. Infirmary, Deal, and S. K. Foster to *Victory* for R.N.B.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. A. R. Thomas to be Surg. Lt.-Comdr.

Proby. Surg. Sub-Lt. R. T. Jones confirmed as Surg. Sub-Lt.

G. L. Foss entered as Proby. Surg. Lt. and attached to List 1 of the Severn Division.

ROYAL ARMY MEDICAL CORPS

Capt. de L. Carey retires receiving a gratuity.

TERRITORIAL ARMY

Lt.-Col. G. H. H. Waylen, M.C., T.D., resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. C. M. Bradley to be Maj.

Lts. D. J. Campbell and H. R. Cara to be Capts.

University Candidates.—2nd Lt. J. P. R. Oakes relinquishes his commn.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. F. G. Dobson, D.S.O., having attained the age limit retires and retains his rank, with permission to wear the prescribed uniform.

ROYAL AIR FORCE

Squadron Leader J. B. Gregor to Headquarters, R.A.F., Far East, Singapore, for duty as Principal Medical Officer.

Flight Lts. C. W. Coffey to R.A.F. Base, Gosport; M. T. O'Reilly to R.A.F. Station, Mildenhall, and L. S. Everett to Station Headquarters, Heliopolis, Egypt.

Flying Offr. D. R. Crabb to R.A.F., General Hospital, Palestine and Transjordan.

Dental Branch.—Flying Offr. W. V. A. Denney to R.A.F. General Hospital, Hinaidi, Iraq.

INDIAN MEDICAL SERVICE

Maj.-General Sir Frank Connor, D.S.O., F.R.C.S., has been appointed hon. surgeon to the King in succession to Lt.-Col. G. D. Franklin, C.I.E., who has retired.

MEDICAL TOUR OF THE CÔTE D'AZUR.—La Société Médicale du Littoral Méditerranéen Français has once more arranged a tour of the Côte d'Azur in the Christmas holidays. This year the dates are Dec. 26th–Jan 3rd. Medical men and their families and students of medicine are eligible, and further information may be had from the secretary of the society at 24, Rue Verdi, Nice.

WILLIAM HARVEY'S CHURCH

AN appeal is made to the medical profession to subscribe to the fund that has been open for more than a year having for its object the completion of a new tower for Hempstead Church, Essex, where Harvey's remains lie. These remains are in a marble sarcophagus provided by the Royal College of Physicians of London to which they were transferred 51 years ago to the Harvey vault.

Hempstead Church is a fourteenth century building, and the transactions of the Essex Archæological Society record that the church and surrounding cemetery were consecrated in 1365 by the Bishop of London, Simon of Sudbury. The tower of the ancient church collapsed in 1882, but its appearance before the catastrophe is shown in the little illustration (Fig. 1), which is extracted from "Disciples of Æsculapius" by Sir Benjamin Ward Richardson. Ten years ago a movement was set on foot to restore or rebuild the tower, and local subscriptions to that end were made, but the time was inauspicious, and local generosity was not supported. At the tercentenary celebration of the publication of the De Motû Cordis, held at the Royal College of Physicians of London in 1928, it was felt that a memorial to the founder of scientific medicine should take the form of the restoration of the church which harboured his bones. A committee was instituted by the College to give effect to the strongly felt sentiment, a restoration fund was opened, and on July 7th, 1933, the foundation-stone of a new tower to Hempstead Church was laid by Lord Dawson. The work was set in hand in response to the first donations received, and the reconstructed tower has now been built up

FIG. 2

FIG. 1

to a point indicated by the line drawn across the tower on Fig. 2, the illustration showing the structure as finished. The first portion of the new tower, built largely from the original stones, has been covered in, so as to render the building suitable for services, and the completion now should certainly wait no longer. The present appearance of the structure seems to convey a reproach to us all from the great dead (Fig. 3). Accordingly a further appeal for the sum of £2000 necessary to finish the work is made to the whole medical profession. The members of the Harveian Society of London, to mark their centenary in 1931, instituted a special fund for the reconditioning and rehanging of the bells. These were originally five in number, but on the collapse of the tower one bell was hopelessly shattered.

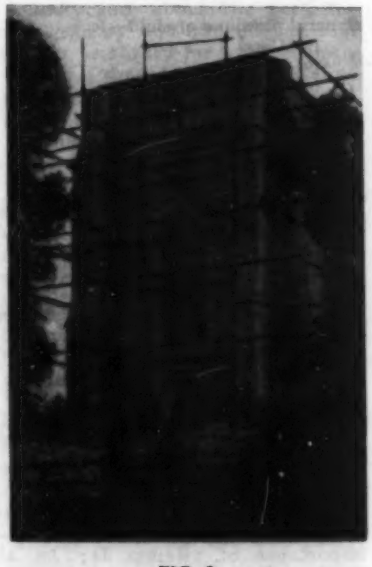


FIG. 3

Donations are invited from all members of the medical profession and should be made payable to the Harvey Memorial Fund and sent to Dr. G. de Bec Turtle, Royal College of Physicians of London, Pall Mall East, London, S.W.1.

SURBITON'S NEW HOSPITAL.—Lord Ashcombe has laid the foundation-stone of a new hospital for Surbiton which is to cost £53,000, of which £27,000 had been raised when the building was begun.

NURSES' HOME AT LEEDS GENERAL INFIRMARY.—A new wing is to be added and other improvements made to the nurses' home at the infirmary. The home will have 350 bedrooms and a large common room is to be built in the new block. At present it is quite impossible to accommodate all the nurses in the home.

PUBLIC HEALTH

The Quest for Sound Teeth

INQUIRIES were made last year in several areas into the circumstances of 12-year-old children who were found to have perfect dentition. Two counties where the research was attempted were East Sussex and Durham. The numbers are far too small to justify a conclusion—in Durham only 8 were found, in East Sussex 52—but they are suggestive.

	E. Sussex.	Durham.
Children of the age of 12 and 14 years recorded with perfect dentition	52	8
Brothers and sisters—		
(*a*) With perfect dentition	15	0
(*b*) With evidence of caries	29	8
(*c*) Children with no brothers and sisters	8	0

Fathers' (F) and Mothers' (M) teeth—	(F)	(M)	(F)	(M)
(*a*) Perfect	4	10	0	0
(*b*) Few decayed	14	10	3	1
(*c*) Many decayed	14	11	2	3
(*d*) No teeth	0	2	2	1
(*e*) Complete dentures	13	18	0	2
(*f*) Dead or not known	7	1	1	1

General physique of child—		
(*a*) Good	31	7
(*b*) Average	20	1
(*c*) Poor	1	0
Domestic circumstances—		
(*a*) Exceptionally good	12	0
(*b*) Average	31	2
(*c*) Poor	0	6
Care of teeth. Brushing, &c.—		
(*a*) Not brushed	17	5
(*b*) Brushed night and morning	12	0
(*c*) Brushed once a day	23	3

As far as they go these figures suggest that heredity and affluence count for little and the toothbrush for not much more. The diet in East Sussex cases is not set out in detail; in Durham four children ate few sweets, five had had cod-liver oil in early life, three much raw milk—one of them also porridge.

Mr. F. W. Buzza, L.D.S. (Yorks West Riding), says that experimental work on the structure of the teeth and their immunity to decay continues but the results he finds difficult to explain. He accepts Mrs. Mellanby's evidence of the overwhelming importance of vitamin D; he also accepts Mr. Evelyn Sprawson's statement that the habitual use of unheated milk is a powerful factor in developing strong resistant teeth. It has been proved over and over again, he remarks, that children in orphanages possess splendid teeth. "A visit to an institution where children are reared reveals one circumstance which cannot fail to strike even the unobservant; each child's toilet accessories, face flannel, towel and toothbrush are in close proximity to the lavatory bowls and the use of a toothbrush is habitual. While dental salvation cannot be insured by a toothbrush, clean teeth have a much better chance of resisting decay than dirty ones. In institutions too," he adds, "the food is plain and it is probable that each child gets more milk than children in private homes."

The superior dental conditions of institutional children is emphasised also in Cumberland where the chief dental officer, Mr. F. E. Gillieron, L.D.S., says that 50 per cent. of the girls in St. Cuthbert's Convent at Wigton were dentally fit. In the institution for boys at Englethwaite (public assistance) 62 per cent. have no dental caries, while in the average day-school in the county only 10 to 15 per cent. are dentally fit. The reason for the superiority is deemed to be not the use of the toothbrush, for that was not strictly enforced in either institution, but regularity of habits and a plain mixed diet of soup, meat, fish, eggs, bread and butter, and fruit, without excess of carbohydrates.

In Wilts, too, it is reported that the teeth of children in the scattered homes compare favourably with those of the children attending the elementary schools. This is the more remarkable when it is recalled that many of the former must have come from poor home conditions, since they would not have been admitted if the parents were able and fit to look after them.

In the elementary schools as a whole the number of children with "naturally" perfect teeth is very small and great efforts are required to secure healthy mouths. The work begins before the child is born. Dr. W. F. J. Whitley (Northumberland) says in his report, "It is not sufficiently appreciated that money expended on the dental treatment of expectant mothers and on school-children is a first-class investment and that the two are really interdependent. It is of little use treating school-children unless some antenatal attempt has been made to endow them with a sound dentition." In Hampshire the efforts against the "appalling incidence of dental caries" have a wide scope:—

1. The diet of the pregnant mother should contain essentials for the promotion of the teeth of the developing child. Medical officers at antenatal clinics have been asked and reminded to pay special attention to this point and provision has been made for the diet to be improved through the guardians committees on direct requisition from the medical officers at the clinics. Midwives have been asked to pay special attention to the diet of women, who engage their services.

2. The importance of breast-feeding is impressed on all health visitors.

3. At child welfare centres the dental officers inspect all the children, advise and treat the early cases of caries found. A general talk is also given and the sale of toothbrushes encouraged by stocking a cheap but reliable brand.

4. At schools the dental surgeons give a talk of a few minutes' duration to the senior classes on the day of inspection. To make time for this talk the detailed charting of dental defects at school is not required.

5. Leaflets are distributed by the head teachers to leavers emphasising the need for continuous attention to their teeth.

6. Propaganda directed towards the taking of more milk in schools should help towards better dentition.

On the top of all these measures comes the conservative work of the dentist. As Mr. P. Millican, L.D.S. (Norfolk), says, "to be expected to repair teeth in a mouth which will afterwards be neglected is naturally disheartening to the dentist," and Mr. B. R. Townend, L.D.S. (Yorks West Riding), notes the tremendous variation in the durability of fillings which he thinks depends not so much on the character of the dentist's work as on the hygiene of the mouth and the structure of the tooth.

The weakest part of any filling is the margin, and if this is not kept clean and free from carbohydrates fresh caries will commence there, enlarging the cavity and allowing the filling to become loose. A filling is but a patch and a patch put on a poor

material may have the result that the rent is made worse.

In many areas attention is being more and more focused on conservative work; Dr. A. H. Wood (Warwickshire) states:—

"The voluntary character of all school dental schemes limits treatment to those of the children who accept the services of the school dental surgeon, and experience has shown that in the past many children have failed to take advantage of the scheme until they were approaching school-leaving age, by which time the required repair has become so extensive, necessitating much time and trouble on the part of the school dental surgeons before treatment is completed. In order to overcome this difficulty the education committee have revised the dental scheme with a view to encouraging acceptance of treatment in the early years of school life, providing at the same time annual reinspection and the offer of any further treatment required for those who have entered the scheme before the age of 9 years. Treatment will thus be concentrated on those who are anxious and willing to accept conservative treatment, who will then go through their school life with mouths free from caries, and will reap their reward in a future healthier and happier adult life."

A difficulty noted in many districts is the opposition of parents to conservative work—all they appreciate is the need for extraction of a tooth which aches. In Warwickshire Mr. A. Topping, L.D.S., has met with parents who accept dental treatment for their children only with the stipulation that no filling operations are carried out. It would be difficult, he thinks, to apportion between child and parent the responsibility for this obstruction to conservative treatment, but under the new scheme to be instituted this difficulty will be avoided.

In the rural areas the use of a dental van has been found of value. Mr. R. R. Maclean, L.D.S. (Notts) writes that the trailer dental van has again proved its value and further experience has not revealed any unsuspected disadvantages. It has been the means of creating a sustained interest in the dental work amongst parents, teachers, and scholars. In Hants Mr. E. S. Kench, L.D.S., regards the introduction of a dental trailer as the most outstanding event of the year. Faults and difficulties have arisen but they have been overcome. In Leicestershire the use of such a van has proved impracticable owing to the difficulty of finding a suitable place for it near the school premises.

On the results of dental schemes as a whole there is difference of opinion. Medical officers of health of some counties—e.g., Gloucester—report steady improvement; others regret that affairs are worse now than they were. In nearly all these latter areas there is insufficient staff.

Tuberculosis in Lancashire

The county of Lancaster has a flair for administration and knows it. The report of the central tuberculosis officer always contains evidence of administrative difficulties surmounted—or indeed anticipated. The county is a big one and the scheme covers a million acres with a population of more than 1,800,000, and an annual expenditure of nearly £200,000. There are 24 tuberculosis dispensaries with 7556 definite cases on the registers and the average number of occupied beds is 914. The success of such a scheme, as Dr. Lissant Cox well knows, depends primarily on cordial relations with the medical practitioners in the county, and he tells us that 89 per cent. of new cases were sent *before notification* to the tuberculosis officers for an opinion as to diagnosis. The death-rate from pulmonary tuberculosis was slightly higher last year than in 1932, when it was the lowest on record, but a similar small rise was general throughout the country, due no doubt to the influenza epidemic early in the year. The death-rate from non-pulmonary tuberculosis has fallen continuously. Taking both together, Dr. Cox estimates the saving of human life in the county, owing to the improvement between 1914 and 1933, at 909 lives last year. The group which has shown least response to treatment is the female age-group 15 to 25 years, but even here the death-rate is well below the rate for 1912–14.

Dr. Cox insists on the value of a dispensary unit of a certain size, serving not less than a population of 200,000 rural or 300,000 urban. Such an area can be managed by a team of one whole-time tuberculosis officer, with one or two medical assistants, four to six nurses or health visitors, and one or two clerks to keep records, prepare reports, and do routine correspondence. We stand or fall, he says, on the skilful application of special expert methods of diagnosis and treatment. A proper X ray plant costs £600 and a dispensary also requires room for artificial pneumothorax refills; hence the chief dispensary of a unit must be bigger than heretofore thought necessary. Many areas are suffering from too small buildings and he would like the Ministry of Health "with immense courage" to publish a black list of units inadequately equipped. He is equally sure about the need for unity between the dispensary and the institutional unit. It is, he says, just as absurd for a tuberculosis officer to have no beds at a sanatorium or hospital as for a consultant physician to have no beds; and he illustrates the disunity of the two sides of tuberculosis work by pointing to the arrangements in London where two separate authorities control the two sides.

Some of the results of efficient administration peep out from Dr. Cox's report. It has for instance been his policy to remove from the register as recovered patients who have remained quiescent under supervision for three to five years. A table in the report shows that 96·6 per cent. of those written off as recovered did not return to the dispensary. Large sums of public money, he remarks, are saved by the dispensary staff not having to supervise and examine periodically several thousand patients throughout the remainder of the patients' lives. It is also the practice of Lancashire to provide no more than one sanatorium bed for every 7560 of the child population, 0 to 15 years, and the conservative standard of diagnosis appears to be justified by the after-results, for of 3556 young adults who came on the dispensary registers as definite cases of tuberculosis in the period 1927 to 1933 (and who could therefore have been seen as children in or after 1913) only 30 had been rejected in childhood as not suffering from pulmonary tuberculosis. Artificial pneumothorax treatment now plays a large part in the scheme. About 15 per cent. of all cases entering the sanatoria and hospitals commence it during institutional treatment; many continue it at the dispensaries after they leave. A survey by Dr. F. C. S. Bradbury of 64 cases induced at a pulmonary hospital shows results better by 15 to 30 per cent. than carefully matched controls who did not have the treatment. The controls were selected from contemporary patients of the same age, sex, sputum content, and radiological appearance, Dr. Bradbury's estimate of the extent of lung involvement being corroborated by Dr. C. W. Laird, medical superintendent of the hospital. The report contains an account by Dr. G. Jessel on actinotherapy at the Eccles Dispensary confirming the results set out three years ago in our own columns (1931, i., 1182). The results, Dr.

Jessel concludes, after actinotherapy combined with ancillary forms of treatment, are superior to those after operation—and the cost is much less than if residential treatment had been provided.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 20TH, 1934

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 3327; diphtheria, 1560; enteric fever, 17; acute pneumonia (primary or influenzal), 538; puerperal fever, 58; puerperal pyrexia, 110; cerebro-spinal fever, 17; acute poliomyelitis, 30; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 15; ophthalmia neonatorum, 84. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 29th–30th was as follows: Small-pox, 0; scarlet fever, 1897; diphtheria, 1853; measles 191; whooping-cough, 180; puerperal fever, 26 mothers (plus 14 babies); encephalitis lethargica, 269; poliomyelitis, 9; "other diseases," 302. At St. Margaret's Hospital there were 18 babies (plus 11 mothers) with ophthalmia neonatorum.

Deaths.—In 121 great towns, including London, there was no death from small-pox or measles, 1 (0) from enteric fever, 5 (0) from scarlet fever, 6 (3) from whooping cough, 47 (14) from diphtheria, 57 (13) from diarrhœa and enteritis under two years, and 13 (2) from influenza. The figures in parentheses are those for London itself.

It must be a long time since a week was free from a fatal case of measles. Liverpool reported 4 of the deaths from diphtheria, West Ham and Leeds each 3, Bootle, Huddersfield, Hull, Salford, Cardiff each 2. Of the deaths from diarrhœa, 8 occurred at Liverpool, 4 at Leeds and Birmingham, 3 each at Portsmouth, Sunderland, and Leicester.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 45 per 1000 total births), including 41 in London.

THE LONDON MEDICAL EXHIBITION

WE conclude in this issue an account of the medical exhibition organised by the British and Colonial Druggist, Ltd., who were also responsible for the great exhibition at the seventeenth International Congress of Medicine. The new hall of the Royal Horticultural Society in Greycoat-street, Westminster, gives ample space and an excellent setting for an exhibition of this kind. Open as it was from 11 A.M. to 6.30 P.M. for five consecutive days sufficient opportunity was given for attendance at convenient times by all those towhom the exhibition was expected to appeal. Numbers of new preparations and improved formulæ were shown in the pharmaceutical section, and the steady development of surgical craft was evident from the variety of instruments and appliances of all kinds. There were in all nearly 170 exhibitors and the attendance was larger than on any previous occasion. A similar exhibition will be held in Glasgow next May.

Books

(21, 22) BAILLIÈRE, TINDALL AND COX (7 and 8, Henrietta-street, W.C.) showed a number of their own publications and, in addition, those issued by a dozen other firms. They drew special attention to: "Modern Treatment in General Practice," by Cecil P. G. Wakeley; Green's "Manual of Pathology," revised by H. W. C. Vines; "Surgery of the Sympathetic Nervous System," by Prof. G. E. Gask and J. Paterson Ross; and "Principles of Gynæcology," by W. Blair-Bell.—(20) WILLIAM HEINEMANN, LTD. (99, Great Russell-street, W.C.), exhibited a range of books on medicine and surgery, notably Cox's "Clinical Contraception"; Halls Daly's "High Blood Pressure"; Clendening's "Behind the Doctor"; and McDowall's "Science of Signs and Symptoms."—(32, 40, 41) H. K. LEWIS AND CO., LTD. (136 and 140, Gower-street, W.C.), had a representative selection of works of many publishers as well as their own, and specimens of osteology and anatomical models; they pointed out particularly "Recent Progress in Medicine and Surgery," edited by Sir John Collie; Roxburgh, "Common Skin Diseases"; Ellman, "Chest Disease"; Ray, "Rheumatism in General Practice"; and Hamilton Bailey and R. J. McNeill Love, "A Short Practice of Surgery." On their medical stationery stand they showed simple card index systems of book-keeping and case-taking, hand-painted shields, Dr. Ellman's new stamp of the lungs and heart, and a handy loose-leaf pocket-book constituting a portable card index system for case notes.—(76) THE MEDICAL PRESS AND CIRCULAR (8, Henrietta-street, W.C.) reminded practitioners of their practical journal and their series of articles on modern treatment in general practice, as well as their quarterly symposia and special numbers which endeavour to give the latest knowledge in a concise, authoritative form applicable to general practice.—(25) OXFORD UNIVERSITY PRESS (Amen House, Warwick-square, E.C.) showed their own books and those of various American universities, and selected as of special interest: Kretschmer, "Text-Book of Medical Psychology"; Parsons and Barling, "Infancy and Childhood"; Platt, "Nephritis"; Vaughan, "The Anæmias"; H. Wright, "Essentials of Infant Feeding"; S. Wright, "Applied Physiology."—(156) THE PRACTITIONER (6–8, Bouverie-street, E.C.) had recent issues on view, notably the October Special Number of recent advances in treatment, and pointed out to inquirers that two special numbers were published each year, and that the ordinary issues generally contained symposia on subjects of interest to the doctor.—(98) JOHN WRIGHT AND SONS, LTD. (Bristol), displayed their publications, and pointed out a new "Atlas of Commoner Skin Diseases" by Semon and Moritz, in which the illustrations are actual coloured photographs taken direct from the subject and not from the model. They also reminded visitors that they are the publishers of the Medical Annual.—(15) THE LANCET, 7, Adam-street, Adelphi, W.C., showed the volumes in which series of articles have been collected in book form, of which the most recent is "The Preventive Aspects of Medicine"; and medical books published by Messrs. Hodder and Stoughton.

Spas and Miscellaneous

(60) BATH illustrated its establishment and reminded visitors of the varied forms of therapy available, particularly recommending the springs for spondylitis, and introducing the new thermal vapour treatment cabinet.—(39) BUXTON drew special attention to a new rheumatism clinic which is to open next year and to provide board, spa treatment, and specialist advice as required for persons of moderate means at an inclusive charge of three guineas per week.—(152) HARROGATE emphasised their latest amenity; an arrangement for regulating the diet of patients. The practitioner is supplied with diet sheets, and can enter quantity or comments; one copy is then given to the patient and another to the hotel-keeper, who undertakes to supply the foods ordered.

(53, 54) DOMEN BELTS CO., LTD. (67, Welbeck-street, W.), showed a new abdominal support of which the principal feature is a pair of bands crossing several times and simply adjusted by a pair of buckles at the front of the belt; there is a single fastening behind consisting of three hooks. They also exhibited a variety of other garments designed to control the figure.—(9) THE GAS LIGHT AND COKE CO. (Horseferry-road, S.W.) exhibited some of their latest appliances, notably the High Beam fire, which is said to be more efficient than older models; coloured panel

fires in a range of paints to match any room, and self-acting water heaters for surgery basins and sinks.—(67) KOLYNOS INCORPORATED (Chenies-street, W.C.) had a new shaving cream to show, in addition to their dental cream and mouth wash.—(19) THE MEDICAL AGENCY, LIMITED (Dudley House, 36–38, Southampton-street, W.C.), were again present to inform doctors of the valuable services which they can obtain in such matters as locum tenents, assistants, medical accountancy of all kinds, loans and insurance.—(161) MEDICAL SICKNESS ANNUITY AND LIFE ASSURANCE SOCIETY, LTD. (300, High Holborn, W.C.), had a stand to remind practitioners of the Society founded by medical men and conducted solely for their benefit, providing all forms of sickness, accident, life and pension insurance and loan schemes.

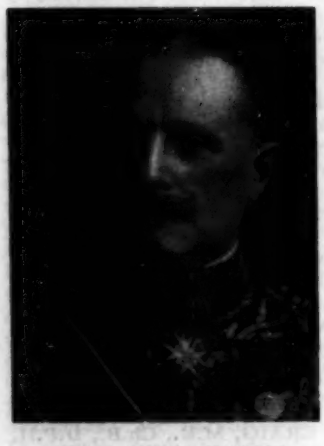
OBITUARY

SIR HAVELOCK CHARLES, G.C.V.O., M.D.Q.U.I., F.R.C.S.I.

MAJOR-GENERAL, I.M.S.; HON. SERJEANT-SURGEON TO THE KING

THE death occurred on Saturday last of Sir Havelock Charles, a distinguished officer in the Indian Medical Service and an earnest worker in the cause of tropical medicine.

Havelock Henry Richard Charles was the son of Dr. D. H. Charles, of Cookstown, Tyrone, and received his medical education at Queen's College, Cork. He graduated as M.D. Q.U.I. in 1881 with first-class honours, gaining the gold medal for medicine, and, after postgraduate study at various centres on the continent, entered the Indian Medical Service. He took the first place in the competitive examination and while at Netley gained the Herbert Prize, the Montefiore Prize, and the Parkes Medal. As was natural after so successful a career as a student he soon obtained special employment, and from 1884 was for two years in part medical charge of the Escort and Field Hospital which accompanied the Afghan Boundary Commission; the medical responsibilities thus incurred he afterwards described in a book. There followed now important teaching appointments in connexion with the I.M.S. He was consecutively professor of surgery and anatomy in the medical colleges of Lahore and Calcutta, and surgeon to the Mayo Hospital in Lahore. In 1905 his close connexion with the Court commenced, for he accompanied the present King and Queen, then Prince and Princess of Wales, on their Indian tour, at the conclusion of which he was appointed K.C.V.O. In 1908 he retired from the Service with a pension.



SIR HAVELOCK CHARLES

[Photograph by Elliott & Fry

On his return to England he immediately began to take an active interest in the development of tropical medicine, the importance of which to the Empire had been growing more generally obvious. In 1910 he became dean of the London School of Tropical Medicine, and at the same time he presided over the meetings of the Royal Society of Tropical Medicine and Hygiene. In 1910 he was appointed Serjeant-Surgeon to the King, and in 1911-12 he accompanied the King and Queen when they revisited India. On his return from India he was promoted G.C.V.O. and gazetted Honorary Surgeon-General. At the same time he was appointed president of the medical board of the India Office, a post which he held until 1923, being at the same time medical adviser to the Secretary of State for India. In 1923 he was created K.C.S.I., and a baronet in 1928. On his resignation in 1928 of the post of Serjeant-Surgeon to the King, he was made Honorary Serjeant-Surgeon, a new and personal appointment. He received many academic distinctions in addition to those from the Crown. In 1906 he was awarded the honorary medal of the Royal College of Surgeons of England, and in the following year the Arnott medal. He was given the honorary degree of LL.D. at Queen's University, Belfast, and was made an honorary F.R.C.S. Irel. He was not a profuse writer, but he contributed to the medical journals, the *Journal of Anatomy and Physiology*, and the *Journal of the Asiatic Society*, papers on anatomy, surgery and anthropology, and he wrote memoirs of his brother officers in the *Indian Medical Gazette*. He was a Visitor of King Edward's Hospital Fund for London, a Knight of Justice in the Order of St. John of Jerusalem.

Sir Havelock Charles, who had been a widower for ten years, married in 1886 Gertrude, daughter of the late Adam Gordon of Aberdeen, by whom he had two sons, who survive him.

We owe to Sir Leonard Rogers the following tribute: "In Sir Richard Havelock Charles the Indian Medical Service has lost its most distinguished member. He was a marked man from the time he entered the Service as a gold medallist and at the head of his batch during a time of keen competition. In his second year in India he was appointed surgeon to the Afghan Boundary Commission, and not very long after he was made professor of anatomy and surgery at the Lahore Medical College. Here his ability and enthusiasm resulted in the complete reorganisation of the department to become the first of its kind in India, and at the same time he did much original research work on differences between the skeletons of Europeans and Indians, which had important medico-legal applications both in craniology and anthropology. So outstanding was this work that when a vacancy occurred in a similar post in the Calcutta Medical College the Government of India appointed him to it; one of the very few occasions in which an I.M.S. officer of another province was appointed to a Calcutta medical professorship. Here he was equally successful in reorganising the teaching of anatomy, while he also proved to be an up-to-date and successful surgeon, and, on promotion to the professorship, an excellent teacher in that subject. As first surgeon to the hospital he was particularly successful in operations for elephantiasis of the scrotum, and effected important improvements, more particularly in primary skin grafting to restore the functions of the male organ. He also obtained comparatively good results with the open operation for liver abscesses, then in general use, and here he stressed the importance of the surgeon himself doing the early dressings to mimimise the dangers of

secondary septic infections in the humid germ-laden Bengal climate. His great abilities and energy, added by the gradual retirement of his more senior colleagues, enabled him to build up an extensive private practice.

"When the Prince and Princess of Wales went to India in 1905–1906 Sir Havelock was the obvious choice for surgeon, and in 1911 he returned to India with them when they had become King and Queen, and retained Their Majesties' confidence when he was Serjeant-Surgeon to the King. He retired in 1908 at an early age to the great loss of surgery in India, but he now entered on an equally successful administrative career as successively member and president of the Medical Board, and during the war in the new post of medical adviser to the Secretary of State. This was the late E. S. Montagu, whose confidence in Havelock Charles enabled Charles to obtain the important increases of pay, and the retiring gratuities at the end of six and twelve years' service respectively, that were necessary to continue to attract recruits for the I.M.S. in view of the uncertainties as to prospects accompanying the grant of increased political power to Indians. In 1928 he retired from the India Office under the age rules full of honours, and with a record of good service probably only second to that of Sir Joseph Fayrer in the whole history of the I.M.S. Sir Havelock combined with exceptional ability high ideals and great strength of character; these made him a doughty opponent, but also a loyal and powerful friend who was ever ready to help any whom he deemed to be deserving of it. We shall not soon see his like again."

DAVID ROGER MOIR, M.B., Ch.B. Aberd.

BORN in Dundee Dr. David Roger Moir was educated at the University of Aberdeen, where he graduated in arts in 1893, taking the degrees of M.B., Ch.B. in 1898. After holding junior appointments in Aberdeen, he settled in practice at Hull and later became surgeon to the Hull and Sculcoates Dispensary. He conducted a large practice skilfully, was president of the Hull Medical Association, and outside his strictly professional duties devoted a good deal of time to the work of the St. John Ambulance Association. He acted as medical officer in many compensation cases arising out of injuries received in the docks, and after the war was a particularly useful examiner for the Ministry of Pensions of disabled men. Here those whom he examined were grateful for the sympathetic discharge of his responsibilities towards the country and themselves. He was an active member of the board of management of the Hull Royal Infirmary and had been president of the Hull and East Yorkshire Division of the B.M.A. His death has deprived Hull of a valuable citizen.

FREDERIC VIVIAN BEVAN-BROWN, M.D. Lond., M.R.C.P.

WE have learnt from a correspondent of the death of Dr. Frederic Bevan-Brown which occurred at his home in Christchurch, New Zealand. It is an untimely event and a career of good performance and high promise has been unduly terminated. He was born in 1888, the son of the headmaster of Christchurch High School, and after some preliminary medical study in that city came to England and entered Guy's Hospital as a medical student. From the beginning he showed his quality. He acquired the English double diploma in 1913 and three years later graduated at the University of London as M.D., B.S. It was now the middle term of the war, and Bevan-Brown joined up immediately with the R.A.M.C., saw service in Mesopotamia and on the Western Front, and remained at his military duties until the armistice. On the cessation of hostilities he returned to Guy's Hospital and held various house appointments and gained in 1920 the diploma of M.R.C.P. Lond. and proceeded to the doctor's degree. He then returned to New Zealand, acquired at the University of New Zealand the degrees of M.B., Ch.B., and was appointed a physician to the Christchurch Hospital. Here he did admirable clinical and teaching service and in addition to written contributions upon various medical topics wrote suggestively upon the relations between the psychic and the physical sides of disease. He was deeply interested in the religious aspects of his calling and was appointed Lay Canon to Christchurch Cathedral. The community not only in Christchurch but in all New Zealand have lost in Dr. Bevan-Brown a valuable member.

BRERETON GEORGE ELLIOTT, L.R.C.P.S.I.

Dr. Brereton Elliott, whose death was announced recently, was resident medical officer at the Fazakerley Sanatorium, Liverpool. The son of a clergyman at Armagh, he qualified for the double Irish diploma in 1890 and practised for a time at Cherry Tree and at Whitton, near Blackburn, where he was prominent in founding the Blackburn Division of the St. John Ambulance Association. He also held a commission in the East Lancashire Volunteers, and on the outbreak of war accompanied this regiment, now the East Lancashire Territorials, to Egypt and fought as a combatant officer there and in Gallipoli. He was promoted major, and was later appointed to command a military hospital in Egypt. Shortly after his return to this country he became resident medical officer at the Fazakerley Sanatorium, the position which he held at his untimely death. He had suffered considerably from the strain of the war.

JAMES CRAWFORD CRAIG, M.B., Ch.B., D.P.H.

Dr. James Craig, whose death we recently announced, received his medical education at University College, London, and the University of Edinburgh. He decided, rather later than usual, to enter the medical profession, and was already a graduate in arts at his University when he became a medical student. He made his mark at once, holding the post of bursary in pathology in 1907 and graduating as M.B., Ch.B. with honours in 1908. He served as house surgeon at the Royal Maternity and Simpson Memorial Hospital in Edinburgh and was for a long period clinical assistant to the Central London Ear, Nose, and Throat Hospital. He now came to London and obtained the D.P.H. diploma of the English Colleges and went into general practice, at the same time acting as surgeon to the Royal Bucks Hospital at Aylesbury, and taking special interest in dermatology. Dr. Craig was a thoroughly well-equipped practitioner and his loss will be felt by many patients.

INSTITUTE OF MEDICAL PSYCHOLOGY.—Dr. Leonhard Seif, of Munich, will give a course of three evening lectures at the institute (Malet-place, London, W.C.), on Nov. 20th, 23rd, and 26th, on the principles and practice of individual psychology. The course has been arranged by the Child Guidance Council for members of clinic staffs and others interested and the lectures will take place at 8.30 P.M.

CORRESPONDENCE

INCAPACITY CAUSED BY MINERS' NYSTAGMUS

To the Editor of THE LANCET

SIR,—One day when the members of the committee appointed by the Medical Research Council to investigate miners' nystagmus were discussing some figures and graphs, produced by Dr. T. L. Llewellyn, showing very clearly the close inter-relation between the incidence of incapacity from nystagmus and the payment of lump sums and other moneys for it (see Report No. 1), the late W. H. Rivers suddenly remarked, "the facts seem clear enough and that brings miners' nystagmus into the same category as railway spine; both are cured by the payment of money." This remark made me reconsider my own opinion on this subject. Anyone who has examined a large number of miners who are working in spite of having nystagmus, and an equal number who have ceased work on account of it, will be in a position to appreciate the remark.

Many miners are now living on small weekly sums paid as compensation, instead of being able to work and earn full wages. They have become neurasthenic, not because their eyes are moving but because, having been "indisposed," they have been advised to "go on compensation" for nystagmus. Once in receipt of a weekly payment, worry begins. How long will the payment last? When will it be safe to stop drawing and resume work? Will work then be available? If the weekly payment is reduced in amount as for partial incapacity, the worry is accentuated. They stay at home, they brood and they mope, they no longer mix with their fellow men, they become neurasthenic. Why? Not because they have nystagmus but because of the delays and uncertainties of the system of compensation as it prevails in this country. What is the remedy? A definite time limit should be placed, by statutory order, on the payment of compensation: for total incapacity 4 months; for partial incapacity 12 or at most 18 months, from the day of stopping work. After this no fresh claim to be valid until another year has been spent below ground. Work is the best means of preventing neurasthenia; in my opinion the miners would gain far more by this than the owners would.

Working in insufficient light is, I firmly believe, the one and only cause of nystagmus in miners. Experimentally it is hard to produce direct proof of this as so long an exposure is required. Such proof as there is is obtained from statistics and by the elimination of other causes. A chart recording the relative response of the dark adapted retina to a series of graduated minimal stimuli by light, just as the chart of the hydrographer records the relative depths of the ocean, would give valuable information. This would require:—

(1) A dark room, as nearly absolutely dark as possible.

(2) A self-recording perimeter with a small spike at the central, i.e., fixation, point on which the observer could place the tip of his index-finger in the dark and "fix" it quite accurately enough, thus avoiding the use of more than one light; no light being required at the point of fixation.

(3) A light or lighted spot the illumination of which can be varied and the volume of light and of each variation of it accurately measured, this would involve the measuring of about one-millionth part of a foot candle; this light would have to be attached to the mobile carrier on the arm of the perimeter; then a chart could be made recording the response to light, so faint that it could only just be distinguished against a black background, and to other slightly brighter lights until even the least responsive parts of the retina had been stimulated.

If, when obtained, the chart shows that the most sensitive part of the retina, in extreme dark adaptation, is roughly circular in outline, then it would confirm the theory that rotation of the eyes takes place so that a fresh spot on the retina is substituted for a fatigued one.—I am, Sir, yours faithfully,

Oct. 23rd. G. H. POOLEY.

ACRIFLAVINE FOR SCHISTOSOMIASIS

To the Editor of THE LANCET

SIR,—Prof. Khalil Bey unintentionally misquotes my note of April 28th when he cites me as having claimed a cure for 39 out of 52 cases of schistosomiasis treated with acriflavine. As, at that time, none of my cases had been under observation more than a few weeks I was at pains to avoid any claim as to "cure." Now that it has been possible to keep 34 of these cases under observation for a period of three to six months the question of cure can be considered. The follow-up showed reappearance of ova in the fæces in half the cases within three months. The remaining 50 per cent. were free from symptoms and from ova in the excreta three to six months after treatment, and it seems justifiable to class this group as cured. The majority of these cases were heavy infestations. In face of even such modest results as these the failure of acriflavine in the very thorough trial carried out by the Cairo workers is the more puzzling. That the susceptibility of the parasites differs in the two experiments would provide a possible explanation but for the fact that Dr. El Moneim el Diwany (in your issue of Sept. 8th) has apparently met with success in treating schistosomiasis in Egypt with acriflavine.

I am, Sir, yours faithfully,

Loughton, Essex, Oct. 24th. A. C. FISHER.

POLYCYTHÆMIA AND THROMBOPHILIA

To the Editor of THE LANCET

SIR,—In a recent paper under the heading Erythræmia, with Migraine, Gout, and Intracardiac Thrombosis (THE LANCET, Oct. 13th, p. 808) I described a case in which there had been old thrombotic occlusion of the splenic artery and in which afterwards cardiac thrombosis and mesenteric thrombosis (I was not sure if mesenteric embolism could be excluded) occurred. I mentioned that the abundance of the megakaryocytes in the bone-marrow might be correlated with the high thrombocyte count in the blood a few days before death. I knew of course of the occasional association of arterial thromboses as a main feature in some cases of erythræmia, which I had first become acquainted with through the case published by R. Hutchison and C. H. Miller in your own columns (THE LANCET, 1906, i., 744), but I was not aware of a quite recent elaborate article by H. Lüdeke on "Thrombophilia and Polycythæmia" (*Virchows Archiv*, 1934, ccxciii., 218).

Dr. Lüdeke defines thrombophilia as a pathological disposition to recurrent thrombus-formation, especially in unusual situations. He describes four cases of thrombophilia in polycythæmic cases and gives a critical review of literature on the subject. In about 60 cases described under the headings "spontaneous

thrombosis," "traumatic thrombosis," "thrombophlebitis migrans," he found that blood counts were given in only 14 cases, and that in 10 of these 14 there was polycythæmia. The tendency to thrombus-formation in polycythæmia may be due to excess of thrombocytes in the blood and diminished circulation-rate, which latter may be due to increased blood viscosity and to increased diameter of blood-vessels resulting from increase of blood volume. He thinks that polycythæmia is an important cause of pathological deposition of thrombus from the circulating blood. I am, Sir, yours faithfully,

London, W., Oct. 29th. F. PARKES WEBER.

PURKINJE AND THE HARVEIAN LECTURER

To the Editor of THE LANCET

SIR,—Dr. James Collier's article on Inventions and the Outlook in Neurology in THE LANCET of Oct. 20th (p. 855) prompts me to call the attention of the author and your readers to the following statements which evidently are based on not quite correct informations.

1. Purkinje, The Nerve-cell: "In 1835 an Austrian priest of gipsy family became . . . etc." J. Ev. Purkinje was neither a fully ordained priest nor a gipsy! In fact, to call J. E. Purkinje a gipsy evokes, if I may put it that way, an almost distressing feeling, for Purkinje was one of the greatest men from our countries, in fact one of the greatest physiologists, or better to say, scientists in the realm of medicine, of the last century. J. Ev. Purkinje was born on Dec. 17th, 1787, in Libochovice in Bohemia—Bohemia is a country of Czechoslovakia in the same sense as Wales is a part of Great Britain—and was of Czech parentage. For a short, yet excellent, biography of Purkinje in English see the well-known "History of Medicine" by Fielding H. Garrison. London: Saunders, 1917, p. 475 et seq. of the second edition which I have to hand.

2. The statement that the cellular theory of tissues was established by Schleiden and Schwann is not quite exact, for Purkinje was not only an inventor of microscopic technique but also the originator of the cellular theory, as has been shown by F. K. Studnička, who is an authority on the life and work of Purkinje. See "Nature," London, October, 1932, p. 634, "The Early History of the Cell Theory," by J. Florian, who brings a short, yet fully informative, summary of Studnička's researches on the history of the cellular theory. For particulars see Studnička's papers as follows: (1) "Die Organisation der lebendigen Masse," Möllendorf's Handbuch der Anatomie des Menschen, vol. i., Part 1. (2) "Aus der Vorgeschichte der Zellentheorie, H. Milne Edwards, H. Dutrochet, F. Raspail, J. E. Purkinje," Anatomischer Anzeiger, vol. lxxiii., Nos. 17–18, Jena, 1932. (3) "Matthias Jacob Schleiden und die Zellentheorie von Theodor Schwann," Anatomischer Anzeiger, vol. lxxvi., Nos. 5–6, Jena, 1933. (4) "Joh. Ev. Purkinjes und seiner Schule Verdienste um die Entdeckung tierischer Zellen und um die Aufstellung der Zellentheorie," Acta Societatis Scientiarum Naturalium Moravicae, tom. iv., Fasc. 4.

3. Prochaska, Reflex Action: "In 1784 a professor of anatomy in Moravia wrote a . . . etc." In the eighteenth century there was no anatomy in Moravia—Moravia is a country and a part of Czechoslovakia in the same sense as is Wales a part of Great Britain. The only one full university in Moravia, with a medical faculty and ipso facto an anatomy faculty, is the Masaryk University, of which I am a member, and this university was founded after the war. Prof. George Prochaska was born in 1749 in Blízkovice in Southern Moravia, studied medicine in Prague and in Vienna, was later professor of anatomy and physiology at the University of Prague, and afterwards at the University of Vienna till 1819. The paper referred to by Dr. Collier is, in all probability, the following one: Adnotationes academicae contra observationes et descriptiones anatomicas, Prague and Leipzig 1780–1784.

I trust that the author of the very interesting oration will believe me that I make these few remarks in the fairest spirit, for I know very well that it is, as in this case, much easier for me to get the necessary information than for a writer outside my country.

I am, Sir, yours faithfully,

V. SUK.

Masaryk University, Anthropological Institute, Czechoslovakia, Oct. 24th.

THE UBIQUITOUS COLD

To the Editor of THE LANCET

SIR,—Mr. Macleod Yearsley in his letter in your issue of Oct. 13th supposes that "a headmaster who dared to issue a notice that any boy sent to school in the acute stage of a cold would be sent home at once would be in the nature of a hero, but he might find himself a martyr." It would be useful to know the experience of those in charge of schools who are attempting to deal with this question. At a boarding-school while it might be rather difficult to send back a pupil suffering from a cold he might at least be isolated. And the common cold might even be scheduled as an infectious disease for the purpose of the medical certificate which is required each term by the school authorities.

In some ways the day-school is more difficult to deal with because it is not a self-contained community like the boarding-school. In order to gain some information about the problem here I have made inquiries from the head of a girls' day-school and kindergarten who conducts a systematic campaign against colds. I showed her Mr. Yearsley's pathetic letter and invited comments. She tells me her experience is that unless the head of the school or her deputy sees that the rule is *irrevocably* kept it becomes quite useless. She says:—

"It is only after a long period of consistency in the matter that parents begin to realise that it does answer to keep children away at the beginning of the cold, and that it is in their own interest. Even then one gets the remark, 'She is well dosed—I don't think *she* will come to any harm.' On the whole I find the parents willing to help and appreciative of the rule. But the school staff must be just as consistent as the head in not allowing children with colds to attend; every case must be reported at once until the school rule is understood. Even then one has to begin all over again with new children. I heartily agree that the individual cold may not be preventable, but we certainly can make an effort to abolish mass production."

I gather that even medical parents are not entirely guiltless in this matter, and it is extremely difficult for a lay person to send home the child of a doctor. But this gallant headmistress does so and survives.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 27th. LEONARD F. BROWNE.

WALSALL GENERAL HOSPITAL.—An extension costing £25,000 was opened at this hospital last week. The new wards are designed on the verandah principle and increase the accommodation from 100 to 146 beds.

MEDICAL USES OF RADIUM

REPORTS FROM RESEARCH CENTRES

IT is generally agreed that the three varieties of malignant disease (other than skin cancer) which offer the most promising field for the use of radium are uterine, buccal, and breast cancer. In the twelfth of the annual summaries of results of research work in the treatment of cancer by radium lent by the Medical Research Council to centres throughout the country,[1] the bulk of the space is taken up with these three regions.

UTERINE CANCER

It is stated that the technique generally adopted is local treatment with radium supplemented by X rays to the pelvis. A comparison of the results obtained with those obtained by surgery is said to bring out two outstanding points: frankly operable cases are treated just as successfully by radium as by surgery, but with a much smaller operation mortality, while surgically inoperable cases treated by radiation yield a by no means negligible percentage of clinical cures—i.e., apparent freedom from disease—of five years' standing. This leads an increasing number of gynæcologists to refer their patients for radiotherapy rather than to submit them to a surgical operation.

The results reached in cases of cancer of the *cervix uteri* are given in some detail, the cases being divided into four stages of disease, and a comparison made between seven different centres. For this comparison the results with patients treated in the three years 1930, 1931, and 1932 combined are used, so that the duration of observation is short. It is concluded that there is "a somewhat astonishing difference in the survival-rates, and that this difference can only be attributed to differences in the details of treatment since the *general* methods of treatment are very similar." It must be observed, however, that the comparison is a very rough one, since the proportions of patients treated in each of the three years amalgamated are not by any means the same at the different centres. For instance, at St. Bartholomew's Hospital there were 36 patients of Stages I. and II. treated in 1930–32 and at University College Hospital there were 29. But at the former 31 per cent. belong to the latest year, 1932, compared with only 21 per cent. at the latter. The slightly higher survival-rate recorded for the patients at St. Bartholomew's is not, therefore, very surprising. In fact, the only centre which does show a quite abnormal result in comparison with the other centres is the Marie Curie Hospital. Of 106 patients in Stages I. and II. treated there in 1930–32, 83 per cent. were alive at the end of 1933, while of 249 patients treated at six other centres the figure was only 52 per cent.; similarly, 40 per cent. of 269 patients in Stages III. and IV. treated at the Marie Curie Hospital were alive at the end of 1933, compared with 28 per cent. of 209 patients at the other centres. If separate years be taken, instead of the amalgamation of the three, a similarly favourable result is reached, so that the statistical fallacy referred to above is not important in this case. If these differences are due to differences in the details of treatment they appear to be very important details. On the other hand, it may be noted that the proportions of patients in each stage differ very widely between the centres. For instance, at the Marie Curie Hospital in 1930–32 only 28 per cent. were classified as Stages I. and II. and 72 per cent. as Stages III. and IV. At Birmingham General Hospital, on the other hand, 61 per cent. are allocated to Stages I. and II. and only 39 per cent. to Stages III. and IV. Such very large differences inevitably raise the question as to whether the classified standards by which patients are allocated to the various groups really are identical at the different centres.

[1] Medical Research Council. Special Report Series No. 197. H.M. Stationery Office. 1934. Pp. 40. 9d.

BUCCAL CANCER

For primary lesions of the tongue radium is said to be successful in the proper hands. Primary growths of the tongue are subjected to interstitial treatment, or exposure to larger units, 1 g. of radium and upwards, applied externally. Dissatisfaction is recorded with the results of the treatment of the glands associated with buccal cancer; at present there seems to be an even balance of opinion and practice between surgical removal and irradiation.

In 1930–32 over 300 patients have been treated per annum for carcinoma of the *buccal cavity*. Taking the figures for 1930 (three and a half years' survival) it is found that of 100 patients with cancer of the tongue 14 survive at the end of 1933, of 40 with cancer of the floor of the mouth 13 (33 per cent.) are alive, of 42 with cancer of the lip 17 (40 per cent.) are alive, while of 41 with cancer of the œsophagus everyone is dead. These patients are not divided by stage of disease, the numbers being, probably, too small for the purpose.

BREAST CANCER

The success which has followed surgery in early cases of mammary cancer makes it likely that surgery will continue to be used for many years yet. In view, however, of the limitations of surgery, once there is invasion of the axilla, exploration of radiological methods in this region is considered desirable. The axilla is not a favourable site for interstitial radium therapy, being the seat of so many important nerves and blood-vessels. X rays are regarded as probably a more suitable agent, and if the work of H. Coutard in this region can be continued on anything like a comprehensive scale, it is felt that a big step forward will be made in the treatment of breast cancer.

With cancer of the *breast* no attempt is at present made to compare the results reached in different hospitals, and the cases are not divided into stages of disease when treatment was begun, but only into primary and recurrent growths. Taking all the hospitals together 157 cases were treated in the years 1925, 1926, and 1927. Of 98 in the primary group 18 survive at the end of 1933, while of 59 in the recurrent group only three are still alive. Those treated in 1928 may be taken to give the five-year survival-rate (the average duration of exposure to the end of 1933 is actually five and a half years if the patients presented themselves throughout 1928). Of the 104 patients treated in this year 79 are classified as primary and 25 as recurrent. Of the former 21 survive (27 per cent.), of the latter all but one are dead.

Reports from the Council's centres suggest that surgery and radiology are employed almost to at equal extent in the treatment of breast cancer. An centres in St. Bartholomew's Hospital and Aberdeen the practice for some time has been to treat the growth and probable extensions with radium and then, after six to eight weeks, remove it surgically and examine it to see the extent to which the malignant portions have been affected by the gamma radiation.

The details published from Aberdeen show that under certain definite conditions of irradiation there are comparatively few actively growing malignant portions of the growth left. To what extent this issue depends upon the histological character of the growths themselves remains to be established.

At St. Bartholomew's Hospital the patients are to be followed up and their five-year survival-rate ascertained and compared with that obtained by operation and radium respectively; from previous follow-up studies it has been ascertained that the five-year survival-rate is approximately the same—i.e., 40 per cent. following operation or following radium treatment.

In addition an intensive histological study will be made of the breast and glands after removal in order to find out: (*a*) the histological effects of radium on carcinoma tissue; (*b*) whether the treatment has destroyed all the tumour cells, or left areas untouched; (*c*) whether carcinomatous glands are effectively treated by radiation; (*d*) the optimum time for excision of the breast after irradiation.

The following procedure has been adopted:—

On admission the site of the tumour and palpable glands, if present, are outlined in Indian ink and photographed. Radium is then inserted into the tumour and left for seven days; one or more radon seeds are put in to mark the site of the tumour, and an X ray photograph is taken with the radium needles in situ. On removal of the radium a small piece of the tumour is taken for biopsy. After 70 to 80 days the breast and axillary glands are excised and subjected to detailed histological examination. The breast is pinned out on a board, and hardened in formalin; after 14 days it is accurately outlined on graph paper ruled in 1 cm. squares, the nipple being placed in a constant position—*n* 20. The breast is then cut into vertical strips 1 cm. in width, each labelled so that the breast can be reconstructed. Each strip is carefully examined and sections are taken from any showing signs of growth, and each block is marked upon the diagram.

Nineteen cases have been studied in detail in this manner. It is, however, intended to study a series of 50 cases before a definite conclusion is formulated.

EXPERIMENTAL WORK

In the purely experimental section of the report there will be found a summary of researches designed to elicit more about the response of living organisms to radiation, both when changes are made in the type of radiation and the time intervals at which the dose of irradiation is given, and when changes in the physiological condition of the cell are manifest.

There can be no doubt that the outcome of the research in radium therapy initiated by the Medical Research Council at centres all over the country has done two things: it has helped towards the stabilisation of methods of treatment, and it has shown that the reaction of the tissues of the body to this form of radiation is of the most complex and bewildering variety.

LONDON MEDICAL SOCIETIES

AT the opening of a new session we are again giving for the convenience of our readers the names of presidents and hon. secretaries of London medical societies, with the addresses at which they can be approached.

Royal Society of Medicine.—President: Dr. Robert Hutchison. Hon. secretaries: Mr. C. W. Gordon Bryan and Dr. Anthony Feiling. (1, Wimpole-street, W.1.)

Medical Society of London.—President: The Lord Horder. Hon. secretaries: Dr. H. E. A. Boldero and Mr. C. P. G. Wakeley. (11, Chandos-street, W.1.)

Hunterian Society.—President: Dr. W. H. F. Oxley. Hon. secretaries: Mr. Martin Oldershaw and Mr. A. E. Porritt. (26, Upper Wimpole-street, W.1.)

Harveian Society.—President: Dr. A. Hope Gosse. Hon. secretaries: Dr. T. C. Hunt and Dr. A. D. Morris. (12, Queen Anne-street, W.1.)

Royal Society of Tropical Medicine and Hygiene.—President: Sir Leonard Rogers, F.R.S. Hon. secretaries: Dr. C. M. Wenyon, F.R.S., and Dr. N. Hamilton Fairley. (Manson House, 26, Portland-place, W.1.)

Royal Medico-Psychological Association.—President: Dr. Daniel Rambaut. Hon. general secretary: Dr. Reginald Worth. (Secretary's Office, 11, Chandos-street, W.1.)

Society of Medical Officers of Health.—President: Dr. R. Veitch Clark. Executive secretary: Mr. G. L. C. Elliston. (1, Upper Montague-street, Russell-square, W.C.1.)

Tuberculosis Association.—President: Dr. L. S. T. Burrell. Hon. secretary: Dr. F. R. G. Heaf. (Colindale Hospital, Hendon, N.W.9.)

British Institute of Radiology.—President: Mr. G. Shearer, D.Sc. Hon. secretary: Dr. R. Boulton Myles and Mr. G. E. Bell, M.Sc. (32, Welbeck-street, W.1.)

Medico-Legal Society.—President: Sir Bernard Spilsbury. Hon. secretaries: Mr. Ernest Goddard and Dr. W. G. Barnard. (3, South-square, Gray's Inn, W.C.1.)

London Association of the Medical Women's Federation.—President: Dr. E. M. Pickard. Hon. secretary: Mrs. Philippa Martin. (40, Wimpole-street, W.1.)

Medical Society of Individual Psychology.—Chairman: Dr. J. C. Young. Hon. secretary: Dr. O. H. Woodcock. (22, Ridge-hill, N.W.11.)

Society for the Study of Inebriety.—President: Sir Humphry Rolleston. Hon. secretary: Dr. T. N. Kelynack. (144, Harley-street, W.1.)

The Cancer Society.—President: Dr. A. J. C. Magian. Hon. secretaries: Dr. C. F. Marshall and Dr. D. F. Kennard. (11, Chandos-street, W.1.)

London Jewish Hospital Medical Society.—President: Prof. Charles Singer. Hon. general secretary: Dr. Max Sorsby. (London Jewish Hospital, Stepney Green, E.1.)

St. John's Hospital Dermatological Society.—President: Dr. J. E. M. Wigley. Hon. secretary: Dr. I. Muende. (49, Leicester-square, W.C.1.)

Chelsea Clinical Society.—President: Dr. Charles Sundell. Hon. secretaries: Mr. A. Rugg-Gunn and Mr. H. Paxton Baylis. (35, Harley-street, W.1.)

Hackney Medical Society.—Chairman: Dr. A. J. Ambrose. Hon. secretary: Dr. H. Stark. (26, Stoke Newington-common, N.16.)

Hampstead Medical Society.—President: Dr. J. Alison Glover. Hon. secretaries: Dr. James Fairbrother and Mr. John Kennedy. (2, Fawley-road, N.W.6.)

North London Medical and Chirurgical Society.—President: Dr. J. H. Morton. Hon. secretaries: Dr. W. E. Snell and Dr. J. Campbell Maxwell. (Royal Northern Hospital, N.7.)

North-West London Medical Society.—President: Sir Harold Gillies. Hon. secretary: Mr. Lionel Green. (127, Harley-street, W.1.)

Priory Medical Society.—Hon. secretary: Dr. T. Pearse Williams. (112, Harley-street, W.1.)

South-West London Medical Society.—President: Dr. W. J. Morrish. Hon. secretaries: Dr. E. G. Housden and Dr. A. W. Wells. (51, Longley-road, S.W.17.)

Paddington Medical Society.—President: Dr. W. G. Bendle. Hon. secretary: Dr. Saul Crown. (81, Elgin-avenue, W.9.)

West London Medico-Chirurgical Society.—President: Dr. Howard M. Stratford. Hon. secretaries: Dr. Geoffrey Konstam and Mr. James Kemble. (40, Harley-street, W.1.)

West Kent Medical Society.—President: Dr. L. W. Bain. Hon. secretary: Dr. C. J. B. Buchanan. (267, Baring-road, Grove Park, S.E.12.)

SALE OF CHRISTMAS SEALS.—The National Association for the Prevention of Tuberculosis is again organising a sale of Christmas seals to provide funds for the development of tuberculosis work all over Great Britain. The idea originally came from a Danish postal clerk, who decided that every letter and package at Christmas time could bear another stamp, which would be sold for the benefit of a hospital for tuberculous children. The scheme has spread to other countries, and last year it was tried successfully in this country. Sheets of seals may be had from the organising secretary of the association, Tavistock House North, Tavistock-square, London, W.C.1.

PANEL AND CONTRACT PRACTICE

The Panel Conference and After

In the debate on certification it was stated that, whilst some societies never paid beyond the date of the medical certificate, others paid up to the day of the agent's visit whatever the date on the certificate. This was risking surcharge by the Government auditor if the man declared off before the date of this payment, but some large societies said they never had any trouble of this kind although they always took the risk.

The Insurance Acts Committee, after withdrawing the original paragraph on alternative occupations on the ground of infringement of professional secrecy, induced the conference to accept the suggested letter with the addition of a line indicating when it was thought a final certificate would be issued. It came out at the conference that the I.A.C. had not discussed the question of professional secrecy with their legal advisors. The form is actually in use at the present time by some societies, but, in view of the fact that such procedure would not be adopted in private practice, insurance practitioners who want to avoid trouble would be well advised to consign it to the wastepaper basket, if and when it arrives. Alternatively, the consent of the patient might be obtained to report on his condition. It is not easy to see in what way this letter is preferable to reference to the R.M.O. Dr. Dain, chairman, said that two societies would not have anything to do with it on the ground of waste of time which might be occasioned in its use; they get the R.M.O.'s opinion in about four days. He seems to have spoken of "the unsatisfactory procedure of referring the patient to the R.M.O. himself" without explaining to the conference in what respect the procedure is unsatisfactory. Many doctors are now doing this quite frequently in cases of doubtful incapacity with the full knowledge and agreement of the patient.

The patient respects the doctor who says to him "In your case it is difficult to decide how much longer you ought to stay on the funds. You see I have to be fair to your society as well as to you, I am therefore proposing to get the R.M.O.'s opinion about your condition. He will let me know what he thinks of your case." Such a procedure cuts away the ground from the agent who goes round telling the patient that it must have been the doctor who sent the case to the R.M.O., as the society did not. The procedure is fair to all parties, it is straightforward, and in conformity with the best traditions of private practice.

National Defence Trust

The latest figures are satisfactory although London was severely criticised at the conference for the small percentage of its contribution: 37 as compared with 57 by Middlesex. The explanation is that the London committee subscribes to two funds, the national and that of the M.P.U., between which, in the absence of precise instruction, the money is equally divided. Last year sanction was given by the conference to spend part of the interest in helping aged and infirm practitioners to retire, thus preventing harm to themselves and to the service. The outlay is not large, for these old people do not as a rule live more than a few months after retirement. Sanction was also given to helping insurance practitioners in Llanelly who have suffered loss through resisting the proposals of the workmen's committee. There is some division of opinion as to what should be done with this fund. Some want to see the interest used for the benefit of the service, one suggestion being to give grants to research workers; others would like all the interest to be added to the principal to increase the fund as a fighting force—at the moment it does not represent 4 per cent. of the total annual income of the service. Smethwick wanted to make certain that the older practitioners who have paid their quota should not be asked to continue subscribing simply for the benefit chiefly of younger men who do not subscribe. Some return, it was felt, should be made to the old subscribers.

Partnership with Non-Panel Practitioner

Lancashire asked the conference to express the view that such a partnership was prejudicial to the observance of the regulations by leading to the receipt of fees by insurance practitioners from patients on their lists. Dr. Dain pointed out that a practitioner is not bound to disclose the fact that he is in partnership with a doctor not on the insurance list. This important subject has not been discussed at the conference for a long time. Take the case of Dr. N., not an insurance practitioner, in partnership with Dr. I. who is on the medical list. The question arises whether their surgeries are in separate houses or in the same building, whether they use the same surgery at different times for their consultations. There can be little cause of complaint if an insured person on the list of Dr. I. consults Dr. N. at Dr. N.'s house when Dr. I. is himself available to be consulted, but if such a patient is sent by Dr. I. to see Dr. N. then Dr. N. becomes the deputy of Dr. I. and there will presumably be grounds for complaint if a fee was charged by Dr. N. The position becomes a little more difficult for the patient if the two surgeries are in the same building, for new patients may not know either Dr. I. or Dr. N. personally. In such cases some indication should be made as to which room is being used for the insurance part of the practice. There can, however, hardly be any excuse for Dr. N. charging fees to insured persons on Dr. I.'s list when both use the same room at different times for consultations. Obviously a patient who suddenly decides to see his insurance doctor will consider Dr. N. to be acting for the doctor of his choice if, when he arrives at the surgery he finds Dr. N. doing Dr. I.'s work. Dr. N. will of course not want to charge the insured person on Dr. I.'s list if he recalls that he is already sharing in the payment made to Dr. I. for his contract. All these difficulties would straighten themselves out if insured persons were definitely told that when consulting a new doctor they should state that they claimed to be treated as an insured person. The position of Dr. N. is quite different when it comes to the treatment of insured patients who are not on his partner's list; for them he is quite free from any panel obligations such as emergency treatment or temporary resident work.

UNIVERSITY OF CAMBRIDGE.—It is announced that Sir Percival Horton-Smith Hartley, consulting physician at St. Bartholomew's Hospital, has made over to the University for the further endowment of the Raymond Horton-Smith prize securities producing an income which will restore the former value of the prize. Sir Percival is the eldest son of the original donor and a brother of Raymond John Horton-Smith whom the prize commemorates.

MEDICAL NEWS

Royal College of Physicians of London

At a quarterly meeting of the College on Oct. 25th, with Lord Dawson, the president, in the chair, Dr. J. R. Charles, Dr. C. E. Lakin, and Dr. W. W. C. Topley, F.R.S., were elected councillors, and Sir Raymond Crawfurd a representative on the committee of management. Sir Comyns Berkeley was elected a representative of the College on the Central Midwives Board. The president announced the following appointments: Dr. F. Ridehalgh as Prophit scholar for the tuberculosis survey scheme; Dr. Edward Loggie Middleton as Milroy lecturer for 1936; and W. R. L. Harrison (Epsom College) as Jenks scholar for 1934. The FitzPatrick lectures, on the history of the endocrine organs, will be delivered by Sir Humphry Rolleston at 5 P.M. on Tuesday, Nov. 6th, and Thursday, Nov. 8th.

The College decided to revise the regulations for the licence so as to preclude the possibility of foreign medical graduates obtaining the diploma, by an indirect channel, with less than three years' clinical study in this country.

By an overwhelming majority the College approved a report from its special committee, which was in general agreement with the recent report of the departmental committee on sterilisation.

The following candidates, having satisfied the censors' board, were admitted to the membership: Henry Howarth Bashford, M.D. Lond., Philip Graeme Bentlif, M.D. Camb., Stanley George Bradfield, M.B. Sydney, Ernest George Brewis, M.D. Durh., Felix Warden Brown, M.B. Oxon., Sushil Chandra Chatterjee, M.B. Calcutta, Hugh Richard Jarvis Donald, M.B. Oxon., Cyril Percy Donnison, M.D. Lond., Clarence Michael Guiney, M.B. Sydney, John Fulford Jarvis, M.B. Lond., Bhagwan Singh Khurana, M.B. Punjab, Frank Graham Lescher, M.C., M.D. Camb., Harry Stephenson Lucraft, M.D. Edin., Samuel Nevin, M.D. Belf., Carlyle Thornton Potter, M.D. McGill, Lawrence Orred Roberts, M.B. Lond., Ibrahim Shawky, Rupert Sykes, M.B. Lond., Padukotah Sreenivasachari Varadarajan, M.B. Madras, Herbert John Williams, M.D. Birm., Rupert Allan Willis, M.D. Melb., and Frederick James Wright, L.R.C.P.

Licences to practise were conferred upon 123 candidates (115 men and 8 women) who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and schools of the successful candidates:—

A. S. Amsden, Guy's; N. Angel, Birm.; T. G. Armstrong, Camb. and London; J. C. Baillie, King's Coll.; C. R. Barker, Univ. Coll.; G. Bates, Camb. and Birm.; D. M. Blomfield, St. Bart.'s; C. H. T. Bond, Camb. and St. Mary's; A. C. E. Breach, St. Thomas's; D. M. Bressler, St. Bart.'s; Margaret M. B. Carey, Royal Free; R. C. F. Catterall, Camb. and Univ. Coll.; F. B. Champion, Guy's; Dora J. A. Clark, Royal Free; R. Clarke, Oxon. and St. Mary's; J. H. L. Conway-Hughes, St. Bart.'s; T. Coste, Vienna and Middlesex; R. H. Dale, Camb. and St. Bart.'s; S. M. Davidson, Camb. and St. Mary's; D. A. Davies, Guy's; G. B. Davis, King's Coll.; J. R. Dickinson, Camb. and Guy's; E. W. Dunkley, London; A. G. Edwards, Guy's; J. K. Elliott, Edin.; R. S. Ellis-Brown, Guy's; E. A. Evans, Camb. and King's Coll.; R. Farncombe, St. George's; A. Fearnley, Oxon. and King's Coll.; S. Y. Feggetter, Durham; H. P. Fernandes, St. Bart.'s; B. W. Fickling, St. George's; I. Finer, Guy's; C. M. Fysh, St. Thomas's; A. B. F. Gibson, Camb. and St. Thomas's; N. C. Griffin, Leeds and Westminster; D. L. Griffiths, Manch.; P. K. Guha, Calcutta and West Lond.; W. H. C. M. Hamilton, Camb. and St. Thomas's; E. B. Harvey, St. Thomas's; G. R. Hawkes, Camb. and Liverp.; C. F. Heys, Guy's; J. R. Hill, St. Bart.'s; R. C. Hill, Guy's; A. H. Hunt, Oxon. and St. Bart.'s; R. Hussain, Patna and St. Bart.'s; F. Janus, Manch.; G. O. Jelly, Oxon and Guy's; P. G. C. Jones, Guy's; T. E. Jones-Davies, Camb. and St. George's; H. Kaplan, Cape and Guy's; A. R. Kennedy, Manch.; A. W. Khan, Bombay and Manch.; M. D. Kiddon, St. Mary's; J. H. Lawrence, Leeds; B. Lawson, Wits'rand and Guy's; A. P. R. Lewis, Westminster; J. A. Lewis, St. George's; S. Lilienfeld, St. Mary's; G. M. Lloyd, R. Lyons, and J. C. McAvoy, St. Bart.'s; E. B. McDowall, Camb. and St. Thomas's; J. G. Mathias, London; K. M. Mayall, Camb. and St. George's; M. L. Meade-King, Camb. and Westminster; B. M. Merriman, St. Bart.'s; J. R. Miles, Cardiff; C. Mitchell, Guy's; Elisabeth C. Morris, Royal Free; J. H. Moseley, Camb. and St. Thomas's; R. F. Mowll, King's Coll.; S. Mullick, Calcutta and St. Bart.'s; R. M. Noordin, St. Bart.'s; D. G. Oehlers, London; H. E. Oson, St. Bart.'s; M. L. Pan, Calcutta and St. Bart.'s; Edith A. S. Parry-Evans, Royal Free; H. F. Patrick, St. Thomas's; S. Paul, Liverp.; W. H. Phillipps, Camb. and St. Thomas's; Lillian M. Pickford, Univ. Coll.; F. W. M. Plant, Birm. and St. George's; M. R. Preston, Middlesex; Kathleen G. Priestman, Royal Free; A. W. Probert, Univ. Coll.; E. J. Pryn, Guy's; J. Rapoport, St. Mary's; C. Ratnayaka, King's Coll.; J. W. Redgate, Middlesex; J. H. Rees, St. Bart.'s; M. G. R. Robinson, Birm.; J. S. Ross, Camb. and St. Thomas's; L. M. Rouillard, St. Thomas's; A. J. Rouse, St. Bart.'s; B. D. Sachdeva, Punjab and West Lond.; J. I. Seidman, St. Bart.'s; R. H. Shah, Manch. and West Lond.; D. B. Shulman, St. Mary's; C. W. T. Shuttleworth and J. A. Sidebottom, Guy's; L. W. Spratt, Camb. and St. Thomas's; I. K. Thomas, Lond.; Nest Thomas, Royal Free; B. Thorne Thorne, Camb. and St. Bart.'s; T. G. Tregaskis, St. Bart.'s; J. L. Treneman, Liverp.; R. C. H. Tripp, Camb. and St. Thomas's; R. J. Vakil, St. Thomas's; W. Waks, St. Bart.'s; P. A. Walford, Camb. and St. Thomas's; H. A. Wallace, Camb. and Univ. Coll.; F. H. Weston, Guy's; F. C. H. White, Camb. and Birm.; C. T. H. Whiteside, St. Thomas's; N. Whittaker, Camb. and Univ. Coll.; S. M. Whitteridge, Guy's; C. W. K. Willard Univ. Coll.; E. G. K. Williams, Camb. and St. Bart.'s; T. M. Williams, Oxon and St. Thomas's; W. Wilson, Manch.; P. L. E. Wood, Camb. and St. Thomas's; L. S. F. Woodhead, Westminster; R. F. Wyatt, St. Thomas's; and Winifred F. Young, Camb. and King's Coll.

Diplomas in public health were granted (jointly with the Royal College of Surgeons): M. R. Burke, J. O. F. Davies, Joan Goodger, Margaret I. Porteous, Kulwant Rai, A. W. Russell, Assa Singh, and J. T. Wybourn; and a diploma in gynæcology and obstetrics to H. Y. Gohar.

University of London

A meeting of the senate was held on Oct. 24th, the vice-chancellor, Prof. L. N. G. Filon, F.R.S., presiding. The following appointments were made to chairs tenable at St. Bartholomew's Hospital medical college: Dr. L. J. Witts was made professor of medicine and Prof. Geoffrey Hadfield professor of pathology, both to take office on Jan. 1st, 1935.

Prof. Witts was born in 1898 and educated at the Boteler Grammar School, Warrington, where he gained scholarships and exhibitions. From 1916–19 he was on war service and he then entered the University of Manchester, graduating M.B., Ch.B. with 1st class honours in 1923. After being house physician at the Manchester Royal Infirmary and at the Brompton Hospital, he was awarded the Dickinson travelling scholarship and worked in America from 1924 to 1926, and then in Prague before his election as John Lucas Walker Student of Pathology in the University of Cambridge. In 1928 he was made assistant in the medical unit at the London Hospital and in 1929 assistant physician to Guy's Hospital. From 1929 to 1934 he held the Will Edmonds Clinical Research Fellowship. Dr. Witts gained his M.D. Manch. with commendation in 1926; in the same year he became M.R.C.P. Lond. and was elected F.R.C.P. in 1931 and Goulstonian lecturer in 1932. His research work has dealt chiefly with blood diseases and especially with anæmia, of which a form bears his name.

Prof. Hadfield was born in 1889. He was educated at Plymouth and at St. Bartholomew's Hospital where he was Harvey Prizeman in physiology and Junior Scholar in anatomy and biology in 1908. He qualified M.B., B.S. Lond. in 1911 and took the M.D. with gold medal in 1913, the M.R.C.P. in 1925, and F.R.C.P. in 1932. He was on war service with the R.A.M.C. from 1914–19 and has held the following appointments:—house physician at St. Bartholomew's Hospital, 1912–13; medical registrar and assistant pathologist at Dreadnought Hospital, 1913–14; pathologist, bacteriologist and clinical pathologist to the General Hospital, Bristol, and demonstrator in pathology at the University of Bristol, 1920–28; University professor of pathology at the London School of Medicine for Women, 1928–33; professor of pathology in the University of Bristol since 1933. His publications include "Recent Advances in Pathology" (in collaboration with Dr. L. P. Garrod) and communications to medical journals on neuropathology, tumour formation, and cardiac infections.

The following appointments were made to readerships at the British Post-Graduate medical school, from Nov. 1st, 1934, or soon thereafter: bacteriology, Dr. A. A. Miles; medicine, Dr. R. S. Aitken; obstetrics and gynæcology, Dr. J. Chassar Moir; pathological chemistry, Mr. Earl J. King, Ph.D.; surgery, Mr. Lambert Rogers.

Dr. Miles is 30 years of age. In 1921 he was elected to an Exhibition in Natural Science at King's College, Cambridge. He obtained a 2nd class in the tripos, taking pathology at Part II. (1925). He completed his medical education at St. Bartholomew's Hospital and qualified M.R.C.S. Eng. and M.B. Camb. in 1928. In 1929 he was admitted M.R.C.P. He has held the following posts:—casualty physician in the out-patient dept. and house physician at St. Bartholomew's Hospital, 1928–29; demonstrator in bacteriology at the London School of Hygiene and Tropical Medicine, 1929–31; and since April, 1931, demonstrator in the dept. of pathology at the University of Cambridge. He has published papers on serology.

Dr. Aitken is 33 years of age. He studied at the medical school of the University of Otago in Dunedin and qualified M.B., Ch.B. New Zealand in 1922. In 1923 he was made demonstrator in anatomy in the same university and tutor in anatomy and physiology at Knox College, Dunedin. In 1924 he held posts as house physician and casualty house surgeon at Dunedin Hospital. During 1924–26 he was a Rhodes Scholar at Balliol College, Oxford, obtained the D.Phil. Oxford in 1927, and during

1926–27 was Owen Williams Research Scholar at the London Hospital, then holding posts at this hospital as pathological assistant, house physician and, since 1930, first assistant to the medical unit. In 1929 he obtained the M.R.C.P. Lond. During 1932–33 he spent six months visiting medical clinics in Germany. His publications are mainly biochemical in scope.

Dr. Moir is 34 years of age. He studied at Edinburgh University, where he qualified M.B., B.S. in 1922 and took the M.D. (with gold medal) in 1930. He obtained the F.R.C.S. Edin. in 1926 and is a member of the British College of Obstetricians and Gynæcologists. He has held the following posts:—house physician at Edinburgh Royal Infirmary, senior house surgeon to Leith General Hospital, house surgeon to the Simpson Memorial and Royal Maternity Hospital of Edinburgh. He was then in general practice for five years, and in 1926 was appointed hon. assist. surgeon to the East Surrey Hospital and medical officer to the Reigate and District antenatal and infant welfare centre. Since 1930 he has been whole-time assistant to the obstetric unit at University College Hospital. In 1932 he was awarded a Rockefeller Fellowship and he spent six months in America, mainly at Johns Hopkins Hospital. He has also studied in Canada, Vienna, and Berlin. His publications are mainly on obstetrics and include an important contribution to the pharmacology of ergot.

Dr. King is 33 years of age. He was educated at public schools in Ontario and British Columbia. He held a scholarship at Brandon College, McMaster University and a bursary (1924–25) and a studentship (1925–26) at the University of Toronto. In 1923 he obtained the B.A. degree with honours in chemistry and biology at McMaster, in 1924 the M.A. in Chemistry, and in 1926 the Ph.D. of Toronto. During 1926–27 he was research associate in the dept. of medical research at the University of Toronto; during 1928 and 1929 he worked at the Lister Institute and at the Kaiser Wilhelm Institut, Munich. Since 1930 he has been assistant professor of medical research and director of the subdept. of biochemistry at the Banting Institute, Toronto. His original work has been concerned chiefly with the chemistry of silicosis and the phosphatase reaction.

Mr. Rogers is 37 years of age. He was educated at Melbourne high school and at the Middlesex Hospital. He served in the Australian Naval Transport Service from 1915 to 1917 and then resumed his medical studies. After passing the second professional examination in June, 1918, he became a surgeon probationer in the Royal Naval Volunteer Reserve. He qualified M.R.C.S. Eng. in 1920 and became F.R.C.S. Edin. in 1924 and F.R.C.S. Eng. in 1933. In 1928 he obtained the M.Sc. (Wales) and was elected F.A.C.S. and in 1931 F.R.A.C.S. He has held the following posts:—house surgeon (1920–21) at Middlesex Hospital; senior house surgeon and later resident surgical officer to Stockport Infirmary, 1924–25; assistant in the surgical unit at the Welsh National School of Medicine since 1926 and assistant director of the unit since 1932; Hunterian Professor, Royal College of Surgeons (1934). He has published numerous papers, chiefly on neuro-surgery.

Dr. Alexander Haddow was reappointed to the Laura de Saliceto Studentship.

Scottish Conjoint Board

At recent examinations of the conjoint board of the Royal Colleges of Physicians and of Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow, the following candidates were successful:—

L.R.C.P., L.R.C.S., AND L.R.F.P. & S.

Merle F. Schneckloth, J. L. Jackson, Fritz Ansbacher, Max Gruenbaum, Herman Lipschutz, Fritz Dannheisser, F. M. Abeles, Julius Levy, S. L. Last, Leo Wislicki, Hans Winter, Heinrich Davidsohn, Samuel James, Paul Rosenthal, Hans Goldschmidt, I. H. B. Ghosh, Georg Friedlaender, A. B. Sternberg, Felix Besser, Edward Whyte, O. E. Manasse, K. H. Lepehne, P. L. Rothschild, P. V. J. Solomon, P. A. Printz, C. H. Goldmann, C. H. Straughan, Gerhart Wolff, Max Rakofsky, D. C. L. Stevenson, Max Kraus, Arthur Ehrlich, Werner Cohen, Werner Grunstein, H. K. Rosenkrans, R. E. Elkan, Johannes Pulfer, L. R. Studebaker, A. B. Morrison, O. S. Kohnstamm, Georg Kosak, Erika Schwabacher, T. C. A. Wilson, Franz Auerbach, Else F. Meyer, Alfred Rosskamm, R. E. Wilson, H. W. Beetham, Wolfgang Buky, Fritz Muller, M. E. Tausend, Rudolf Friedlaender, H. F. D. Whitelaw, T. G. K. Bhagavat, Helmut Nussbaum, H. K.-G. Wong, Fritz Bernstein, Fritz Lewy, Feroze Hussain, and Yewdall Carasik.

D.P.H.

J. A. Guy, Barbara C. Welsh, J. W. Brydon, H. A. Raeburn, Hugh Somerville, and James Macfarlane.

St. Mary's Hospital

A research student will shortly be appointed to the institute of pathology and research at this hospital. Preference will be given to old St. Mary's students and the research may be carried out in any of the departments of the institute. Further particulars will be found in our advertisement columns.

Tuberculosis Association

A meeting of this association will be held at Manson House, 26, Portland-place, London, W., on Friday, Nov. 23rd. At 5.15 P.M., Dr. L. S. T. Burrell will deliver his presidential address on tuberculous reinfection in adults, and at 8.15 P.M. Dr. G. T. Hebert will speak on the termination of artificial pneumothorax treatment.

Rt. Hon. Christopher Addison, M.D., F.R.C.S., has been returned to Parliament for the Swindon division of Wilts.

Vienna Post-Graduate Courses

Post-graduate courses in gynæcology and obstetrics, and on the ear, nose and throat will be given by the American Medical Association of Vienna, beginning on February 18th, 1935. The courses will last six weeks and the teaching will be given in English. Further information may be had from the Association, Alserstrasse 9, Vienna, Austria.

Royal Sanitary Institute

The bed-bug as a housing problem will be discussed at a sessional meeting to be held on Tuesday, Nov. 13th, at 5.15 P.M., at 90, Buckingham Palace-road, London, S.W. Lord Balfour of Burleigh, president of the institute, will take the chair, and the discussion will be opened by Mr. A. W. McKenny Hughes of the department of entomology of the British Museum (Natural History).

Industrial Welfare Society

The Duke of York will preside at this society's dinner at the May Fair Hotel, London, on Dec. 11th, when the speakers will include Lady Snowden, Mr. B. Seebohm Rowntree, Dr. W. J. O'Donovan, M.P., and Mr. Robert R. Hyde. Further particulars may be had from the Secretary at 14, Hobart-place, S.W.1.

University of Manchester

The council of the University has equipped a laboratory of surgical research. The laboratory is at 20, York-place, immediately adjacent to the Royal Infirmary. Applications to work in the laboratory should be made, in the first instance, to Prof. E. D. Telford.

Glasgow University Club

The annual dinner of the London section of this club will be held at the Café Royal, Regent-street, W., on Friday, Nov. 23rd, at 7.30 P.M. Prof. Alexander Macphail, His Majesty's inspector of anatomy for England and Wales, is to be in the chair. Any Glasgow University men who, though not members of the club, wish to attend, are asked to communicate with the hon. secretaries, 62, Harley House, N.W.1.

Edinburgh Graduates Association

The annual general meeting of the West Riding Association of graduates of the University of Edinburgh is to be held in the Great Northern Hotel, Leeds, on Wednesday, Nov. 14th, at 6.45 P.M. The annual dinner will follow at 7.30 P.M. The guest of the evening will be Mr. John Wheeler Dowden, consulting surgeon to the Royal Infirmary and Chalmers' Hospital, Edinburgh. Further information may be had from the hon. secretary of the association, 33, Manor-row, Bradford.

Fellowship of Medicine and Post-Graduate Medical Association

Dr. A. E. Clark-Kennedy will lecture at the Medical Society of London, 11, Chandos-street, W., at 2.30 P.M., on failing vision on Nov. 6th, and on herpes and encephalitis on Nov. 13th. The next lecture in the series on diet and dietetics will also be given at the Medical Society on Nov. 7th, at 8.30 P.M., by Dr. E. G. B. Calvert, who will speak on the diet of the diabetic, and on Nov. 14th, Dr. F. W. Christie will speak on the diet of the obese and thin. On Saturday, Nov. 10th, at 3 P.M., there will be a special demonstration of surgical cases by Mr. C. E. Shattock at the National Temperance Hospital, Hampstead road, London, N.W. Forthcoming courses of instruction include venereal disease at the London Lock Hospital (Nov. 12th to Dec. 8th); gynæcology at the Samaritan Hospital (Nov. 17th–18th); proctology at St. Mark's Hospital (Nov. 19th to 24th); and an evening course in rheumatism at the British Red Cross Clinic, on Tuesdays and Thursdays, from Nov. 20th to Dec. 6th. A course in diseases of the chest will be given at the Brompton Hospital between Dec. 17th and Jan. 11th. A panel of teachers is available daily for individual tuition in various branches of medicine and surgery, and further information may be had from the secretary of the Fellowship, 1, Wimpole-street, London, W.1.

Post-graduate Work in Newcastle

Under the auspices of the University of Durham College of Medicine, classes meet at the Royal Victoria Infirmary, Newcastle, from 1.30 to 5.30 every Thursday afternoon till Dec. 13th (except Nov. 15th). A special course in midwifery and gynæcology is being held on Wednesdays at 3 P.M. Till Dec. 16th there will be lecture-demonstrations in medicine and surgery every Sunday morning at 10.30. Further particulars may be had from the registrar, College of Medicine, Newcastle-upon-Tyne.

Central Association for Mental Welfare

This association will hold a conference on Nov. 21st, 22nd, and 23rd in the British Medical Association House, Tavistock-square, London, W.C., and there will also be two joint sessions at the Royal Agricultural Hall, Islington, N., with the Public Health Congress. Sir Hilton Young, the Minister of Health, will speak at the luncheon which is being held at the Hotel Russell on Nov. 22nd at 1.15 P.M. in connexion with the congress. Further information may be had from the secretary of the association, 24, Buckingham Palace-road, S.W.

Port Regis Preparatory School

At this preparatory school two scholarships of £100 each are annually awarded to the sons of medical men. The school is at Broadstairs, Kent, and the scholarships were recently founded by Sir Milsom Rees. The next examination will be held on March 5th, 1935. Candidates must be under 9 years of age at the time of competing, and the scholarships are normally tenable till the holder leaves the school. The holders will be selected at an interview in London from among those boys who have done best in some simple examination conducted in or near their houses. Applications for the scholarships must be addressed to the Headmaster, Port Regis School, Broadstairs, from whom full particulars may be obtained. The applications must be made not later than Feb. 20th, 1935.

Health Education Conference

The seventh annual conference on health education, organised by the Central Council for Health Education, will be held on Thursday, Nov. 22nd, at the London School of Hygiene and Tropical Medicine, Keppel-street, Gower-street, W.C. Sir George Newman, chief medical officer of the Ministry of Health and Board of Education, will preside over the conference and at 11 A.M. will deliver the opening address. A discussion on the education of the public with regard to nutrition is to be opened by Dr. J. A. Nixon, professor of medicine in the University of Bristol, and Dr. W. G. Savage, medical officer of health for Somerset. Dr. James Fenton, chairman of the Council, will open the afternoon session at 2.30 P.M., after which the discussion on nutrition will be concluded. A second discussion on the education of the public with regard to the consumption of milk, will be opened at about 4.15 P.M. by Dr. Thomas Orr, medical officer of health for Ealing and chairman of the publicity committee of the National Milk Publicity Council, and the names and addresses of delegates should be forwarded not later than Nov. 16th, to the Central Council for Health Education, 1, Upper Montague-street, Russell-square, London, W.C.1.

The Irish Sweepstake

The drawing for the thirteenth in the series of sweepstakes for the Irish Hospitals began on Oct. 27th, writes our Dublin correspondent. Lord Powerscourt, chairman of the Hospitals Committee, in opening the draw referred to certain charges recently made by Sir John Gilmour, Home Secretary, against the methods of management of the sweepstakes. Lord Powerscourt said that it was untrue that the greater part of the money subscribed was held by those who handled it or was given to the government of the Irish Free State. The promoters' remuneration did not exceed 2½ per cent. of the money subscribed. Payments to hospitals had been delayed pending the report of a commission on the hospitals appointed by the government to study the whole hospital question, but the money held up had not gone to the government but was vested in independent trustees. The total receipts for the present sweepstake amounted to £3,234,619. Of this sum £2,001,193 will be distributed in prizes and £590,835 will go to the hospital trustees. In view of the widespread belief that the Irish sweepstakes were on the down-grade it is remarkable that this—the thirteenth—should be the third in magnitude of the series.

PARLIAMENT

NOTES ON CURRENT TOPICS

Reassembly after Summer Recess

BOTH Houses of Parliament reassembled on Tuesday, Oct. 30th, after the summer recess. During the next fortnight parliamentary time will be occupied in passing through their remaining stages several Bills, including the Betting and Lotteries Bill, which were still under discussion when Parliament rose in July. If the programme which the Government wish to carry through is completed by that date it is hoped that the present session will be brought to a conclusion on Nov. 16th, and the new session will be opened by the King in State on Nov. 20th.

HOUSE OF COMMONS

TUESDAY, OCT. 30TH

Reports on the Derelict Areas

Mr. DAVID GRENFELL asked the Prime Minister whether the reports of the commissioners on the derelict areas had been considered; and if so what action it was proposed to take.—Mr. MACDONALD replied: The Government have examined the reports of the investigators, and have reached certain conclusions. They feel, however, that a matter of this importance cannot adequately be dealt with within the limits of question and answer, and they accordingly propose to give a day, which will be arranged through the usual channels, for discussion. As a preliminary to that discussion the Government have decided, after consultation with, and with the consent of the investigators, to publish the reports without delay. I would, however, remind the House that an assurance was given to these gentlemen that any matters they reported to the Government would be treated as confidential, and it will be necessary that before publication the investigators should be given the opportunity to excise from their reports such confidential matter as, in their opinion, should not be made public.

Slum Clearance

Mr. MCENTEE asked the Minister of Health whether he had any information to give the House on the position of slum clearance.—Sir HILTON YOUNG replied: At the 30th Sept. last, the latest date for which figures are available, the position was that 60,242 houses in clearance areas were included in clearance or compulsory purchase orders submitted for confirmation or in agreements for purchase. The total number of new dwellings approved for rehousing was 54,994, of which 26,926 had been completed and a further 19,301 were under construction.

Disposal of London Refuse

Mr. MCENTEE asked the Minister of Health whether the advisory committee on London refuse had finished their work and reported; and if so what action the Ministry of Health proposed to take in the matter.—Sir HILTON YOUNG replied: The committee in question have made an interim report dealing with the disposal of house and trade refuse. I understand that the Metropolitan Boroughs Standing Joint Committee, of which the committee in question is a sub-committee, have asked for the observations of the common council of the City and of the Metropolitan Borough Councils on the report and, after these have been received, they propose to communicate with me.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Nov. 6th.
Orthopædics. 5.30 P.M. (Cases at 4.30 P.M.) Mr. E. Laming Evans: 1. Myositis Ossificans. Miss E. H. Jebens: 2. Deformity of the Wrist. Mr. S. A. S. Malkin: 3. Radiographs of Bilateral Köhler's Disease of Second Metatarsal.
Pathology. 8 P.M. (Lister Institute, Chelsea Bridge-road, S.W.). Demonstrations by A. B. Sabin, J. T. Edwards, E. Klieneberger, and R. St. John Brooks and M. Rhodes. 8.30 P.M. Short papers: E. Klieneberger: Pleuropneumonia-like Organisms in Apparent Symbiosis with Bacteria. H. R. Carne: Mechanism of Immunity against *Corynebacterium ovis*. D. McClean: Production of Staphylococcal Toxin in a Dialysed Medium. W. T. J. Morgan: The Antigen of *B. dysenteriæ* Shiga. S. Levy Simpson, M. Dennison, and V. Korenchevsky: Relationship between the Adrenal and Sex Glands. A. B. Sabin: Mechanism of Immunity to Certain Filtrable Viruses.
WEDNESDAY.
History of Medicine. 5 P.M. Prof. Arturo Castiglioni Morgagni and the School of Anatomy of Padua.
Surgery. 8.30 P.M. Mr. Philip Turner: Some Unusual Perforations. (Presidential address.)
FRIDAY.
Clinical. 5.30 P.M. (Cases at 4.30 P.M.) Cases. Dr. Terence East: 1 and ?. : Dilatation of Aorta. Dr. E. H. Drinkwater: 3. Ganglion of Wrist Treated by a Seton. Dr. Philip Ellman: 4. Congenital Cardiac Malformation. 5. Cushing's Pituitary Basophilism. Dr. Ernest Fletcher: 6. Case for Diagnosis.
Ophthalmology. 8.30 P.M. (Cases at 8 P.M.) Mr. F. W. Law: Pre-operative Preparation of the Conjunctival Sac by Ultra-violet Rays. Mr. Tudor Thomas: A Successful Corneal Graft in Man (with demonstration).

LONDON JEWISH HOSPITAL MEDICAL SOCIETY, Stepney Green, E.
THURSDAY, Nov. 8th.—3.45 P.M., Dr. A. Goodman Levy: Criticisms of Some Aspects of Psycho-analysis from a Layman's Point of View.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Nov. 9th.—8.45 P.M. (Miller General Hospital, Greenwich, S.E.), Dr. John Sophian: The Physiology and Pathology of Menstruation.

CHILD STUDY SOCIETY.
THURSDAY, Nov. 8th.—6 P.M. (Ben Uri Gallery, Woburn House, Upper Woburn-place, W.C.), Dr. Hazel Chodak Gregory: The Importance of Common Colds.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY, Nov. 8th.—8.30 P.M. (11, Chandos-street, W.), Dr. Hilda Weber: Post-menopausal Neuroses.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn-fields, W.C.
MONDAY, Nov. 5th.—5 P.M., Mr. E. K. Martin: Surgical Diseases of Liver and Bile-ducts.
FRIDAY.—5 P.M., Dr. John Beattie: The Posterior Pituitary Problem.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, Nov. 6th, and THURSDAY.—5 P.M., Sir Humphry Rolleston: History of the Endocrine Organs. (Fitz-Patrick lectures.)

UNIVERSITY OF LONDON.
MONDAY, Nov. 5th.—5.30 P.M. (University College Hospital Medical School), Prof. Ludwig Fraenkel: Forty Years of Gynæcological Endocrinology.
FRIDAY.—5.30 P.M. (Royal Free Hospital), Prof. George Barger: Chemical Questions relating to Pharmacology.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.
MONDAY, Nov. 5th, to SATURDAY, Nov. 10th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, W. Tues., 2.30 P.M., Dr. A. E. Clark-Kennedy: Failing Vision. Wed., 8.30 P.M., Dr. E. G. B. Calvert: Diet of the Diabetic.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. All-day course in medicine, surgery, and gynæcology.—CITY OF LONDON HOSPITAL, Victoria Park, E. All-day course in diseases of the chest.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. All-day course in urology.—Courses of instruction arranged by the Fellowship are open only to members and associates.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Nov. 5th.—3.30 P.M., Dr. S. A. K. Wilson: The Motor System.
TUESDAY.—3.30 P.M., Dr. Critchley: The Cranial Nerves and Spinal Senses.
WEDNESDAY.—3.30 P.M., Dr. Collier: Clinical Demonstration.
THURSDAY.—3.30 P.M., Dr. Critchley: The Cranial Nerves and Spinal Senses.
FRIDAY.—3.30 P.M., Dr. Bernard Hart: The Psychoneuroses.
Out-patient Clinic daily at 2 P.M.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.
MONDAY, Nov. 5th.—10 A.M., medical wards, skin clinic. 11 A.M., surgical wards. 2 P.M., surgical wards, gynæcological wards, eye and gynæcological clinics.
TUESDAY.—10 A.M., medical wards. 11 A.M., surgical wards. 2 P.M., throat clinic.
WEDNESDAY.—10 A.M., children's clinic. 2 P.M., medical wards, eye clinic. 3.45 P.M., venereal diseases demonstration.
THURSDAY.—10 A.M., gynæcological and neurological clinics. 11.30 A.M., fracture demonstration. 2 P.M., eye and genito-urinary clinics.
FRIDAY.—10 A.M., skin clinic. Noon, lecture on treatment. 2 P.M., throat clinic.
SATURDAY.—10 A.M., children's and surgical clinics, medical wards.
There will be no lectures at 4.15 this week.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Nov. 9th.—4 P.M., Mr. N. Asherson: Indications for Operating on the Mastoid.

ST. PAUL'S HOSPITAL, Endell-street, W.C.
WEDNESDAY, Nov. 7th.—4.30 P.M., Mr. Jocelyn Swan: Radiography in Renal Disease.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Nov. 7th.—4 P.M., Mr. Clifford Morson: The Advantages of Team-work in Prostatectomy.

LONDON SCHOOL OF DERMATOLOGY, 49, Leicester-square, W.C.
TUESDAY, Nov. 6th.—5 P.M., Dr. J. E. M. Wigley: Tuberculosis Cutis.
WEDNESDAY.—5 P.M., Dr. I. Muende: Histopathology of the Chronic Granulomata. (Chesterfield lectures.)

ROYAL INSTITUTION, 21, Albemarle-street, W.
TUESDAY, Nov. 6th.—5.15 P.M., Mr. Olaf Bloch: Progress and Problems in Photography.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Nov. 8th.—9 P.M., Mr. V. E. Negus: Foreign Bodies in the Air and Food Passages.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, W.C.
SUNDAY, Nov. 4th.—10.30 A.M., Dr. S. Cochrane Shanks: The Stomach after Operation, from an X Ray point of view. 11.45 A.M., Mr. Bright Banister: The Breech Case.

CHADWICK PUBLIC LECTURES.
WEDNESDAY, Nov. 7th.—8.15 P.M. (Manson House, 26, Portland-place, W.), Mrs. Margaret Fishenden, D.Sc.: Health and the Indoor Climate.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, Nov. 7th.—3.30 P.M., Mr. W. E. Tanner: Influence of Hygiene on Surgery.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, S.W.
WEDNESDAY, Nov. 7th.—4 P.M., Dr. W. G. Wyllie: Pulmonary Fibrosis and Bronchiectasis in Children.

LEEDS INFIRMARY.
TUESDAY, Nov. 6th.—3.30 P.M., Mr. Broomhead: Demonstration of Orthopædic Cases.

LEEDS PUBLIC DISPENSARY AND HOSPITAL.
WEDNESDAY, Nov. 7th.—4.15 P.M., Dr. H. G. Garland: Recent Advances in the Treatment of Organic Nervous Diseases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Nov. 8th.—4.15 P.M., Mr. P. G. McEvedy: Diseases of the Gall-bladder.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Nov. 6th.—4.15 P.M., Prof. F. A. E. Crew: Medicine and the Further Evolution of Society. (Lloyd Roberts lecture.)
FRIDAY.—4.15 P.M., Mr. W. R. Douglas: Demonstration of Surgical Cases.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE EAR, NOSE, AND THROAT.
WEDNESDAY, Nov. 7th.—4.15 P.M., Dr. Vernon Smith: The Various Forms of Laryngitis.

NEWCASTLE GENERAL HOSPITAL.
SUNDAY, Nov. 4th.—10.30 A.M., Mr. J. Collingwood Stewart: Hernias and What to do with Them.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY, Nov. 7th.—4.15 P.M. (Royal Infirmary), Prof. A. W. Harrington: Coronary Thrombosis.

Appointments

DUFFUS, G. M. R., M.B. Aberd., has been appointed Senior Resident Officer to Aberdeen Royal Infirmary.

KERR, J. A., B.Sc., M.D. Glasg., D.P.H., Medical Officer of the Borough of Grimsby.

MORLEY, ARTHUR, F.R.C.S. Eng., Hon. Consulting Surgeon to the Charterhouse Rheumatism Clinic.

ORR-EWING, H. J., F.R.C.P., M.D. Lond., Honorary Assistant Physician to the Bristol General Hospital.

RUSHTON, M.A., M.B. Camb., L.D.S., Chief Assistant to the Dental Department at St. Thomas's Hospital.

Medical Referees under the Workmen's Compensation Act, 1925: Dr. THOMAS HARRISON BUTLER, Birmingham (County Court Districts at present comprised in Circuits Nos. 25, 26, and 28, for ophthalmic cases).

Certifying Surgeons under the Factory and Workshop Acts: Dr. J. W. MEANLEY (Holt District, Norfolk); Dr. F. W. A. WATT (Tavistock District, Devon); Dr. W. E. FILDES (Wolverton District, Buckinghamshire); Dr. T. O'DRISCOLL (Guisborough District, Yorkshire); Dr. R. M. EASTON (Erith District, Kent); Dr. E. S. HAWKES (Budleigh Salterton District, Devon); Dr. E. M. R. HUTTON (Ketton District, Rutland); and Dr. J. MCKELVEY (Sowerby Bridge District, Yorkshire).

Vacancies

For further information refer to the advertisement columns

Association of Surgeons of Great Britain and Ireland.—Surgical Scholarship. £350.

Bedford County Hospital.—First and Second H.S.'s. £165 and £140 respectively.

Birmingham Children's Hospital.—Pathologist. £600.

Birmingham City.—Sen. Asst. M.O.H. £750. Also Asst. M.O. for Maternity and Child Welfare. £500.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.

Bristol, Frenchay Park Children's Orthopædic Hospital, &c.—Res. M.O. £250.

Bristol Royal Infirmary.—Sen. Res. M.O. At rate of £200.

British Postgraduate Medical School, Whitehall, S.W.—Dean. £1800.

Cambridge, Addenbrooke's Hospital.—H.P. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Cardiff Royal Infirmary.—Hon. Surgeon, Hon. Gynæcological, and Hon. Asst. Physician. Also Res. Reg. £100.

Central London Ophthalmic Hospital, Judd-street, W.C.—Out-patient Officer. £50.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept.

Chiswick Hospital, Letheravon-road, W.—Hon. Asst. Anæsthetist and Cas. O.

Dewsbury and District General Infirmary.—Hon. Orthopædic Visiting Surgeon.

Exeter City Mental Hospital.—Asst. M.O. £350.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Hospital for Consumption, &c., Brompton, S.W.—Asst. Physician.

Hostel of St. Luke, Fitzroy-square, W.—Res. M.O. At rate of £200.

Hull, Royal Infirmary.—H.P. to Sutton Branch Hospital. At rate of £100.

Indian Medical Service.—Commissions.

Leicester Royal Infirmary.—Hon. Asst. Phys. for Diseases of the Skin.

London County Council.—Two Temporary Divisional M.O.'s. Each £800. Also Asst. M.O.'s at various Hospitals. Each £250. Also Asst. M.O. £600.

London Jewish Hospital, Stepney-green, E.—Hon. Asst. Phys. to Children's Dept.

Macclesfield, Cheshire County Mental Hospital, Parkside.—Asst. M.O. £350.

Maidstone, Kent County Mental Hospital.—Asst. M.O. £500.

Maidstone, Kent County Ophthalmic and Aural Hospital.—Ophth. H.S. At rate of £200.

Manchester City.—Asst. Tuber. O. £650.

Manchester Collieries, Walkden.—Medical Man.

Manchester Hospital for Consumption, &c.—Anæsthetist for St. Ann's Home, Bowdon.

Melton, Suffolk, St. Audry's Hospital for Mental Diseases.—Deputy Med. Supt. £650.

Middlesex Hospital, W.—Medical Man for Asst. in Radium Therapy Dept. £325.

Middlesex Hospital Medical School, W.—Two Asst. Med. Registrarships. Each £300.

Mildmay Mission Hospital, Austin-street, W.—Hon. Surgeon.

Nottingham General Hospital.—Second Cas. O. At rate of £200.

Portsmouth, St. Mary's Hospital.—Two Sen. Asst. R.M.O.'s. Each £350.

Royal Chest Hospital, E.C.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Royal Free Hospital, Gray's Inn-road, W.C.—Two Asst. M.O.'s. Each £350.

Royal Northern Hospital, Holloway, N.—H.P. and H.S. Each at rate of £70.

St. Albans, Shenley Mental Hospital.—Fourth Asst. M.O. £410.

St. Mary's Hospital, Institute of Pathology and Research, W.—Research Studentship. At rate of £200.

Salvation Army, Mothers' Hospital, Lower Clapton-road, E.—Sen. Res. M.O. Also Jun. Res. M.O. £150 and £80 respectively.

Shoreham-by-Sea, Southlands Hospital.—Asst. M.O. £250.

Shrewsbury, Royal Salop Infirmary.—Res. H.S. At rate of £160.

South Mimms, near Barnet, County Sanatorium, Clare Hall.—Med. Supt. £850.

Sunderland Royal Infirmary.—H.P. £120.

Surrey County Mental Hospital Service.—Jun. Asst. M.O. £350.

Swansea County Borough.—Asst. M.O. £500. Also Res. M.O. for Infectious Diseases Hospital. £350.

Wakefield, Middleton-in-Wharfedale Sanatorium.—Med. Supt. £900.

Warrington, County Mental Hospital, Winwick.—Asst. M.O. £500.
H.P.'s. Also one Res. H.S. All at rate of £200.

West London Hospital, Hammersmith, W.—Hon. Asst. Surgeon.

Weston-super-Mare General Hospital.—Res. H.P. and Res. H.S. Each £150.

Wimbledon Hospital, Thurston-road, S.W.—Res. M.O. At rate of £150.

Worcester County and City Mental Hospital, Powick.—Asst. M.O. £350.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Lynton, Devonshire.

Births, Marriages, and Deaths

BIRTHS

CHALLIS.—On Oct. 18th, at Pond House, First Walk, Woodford Green, the wife of Dr. John Challis, of a daughter.

DEATHS

BOWER.—On Oct. 20th, at Knowle, Warwickshire, Reginald Bower, M.R.C.S., L.S.A., in his 90th year.

CHARLES.—On Oct. 27th, at Manchester-square, W., Major-General Sir Richard Havelock Charles, G.C.V.O., K.C.S.I., first Baronet, late Serjeant-Surgeon to H.M. the King, aged 76.

HEATH.—On Oct. 26th, suddenly, at Lynwood, Moor Park, Herts., Arthur Heath, M.D. Lond., F.R.C.S. Eng., aged 60 years.

KYNGDON.—On Oct. 21st, at Newdigate House, Bexhill-on-Sea, Frederick Henry Kyndon, M.D. Aberd., formerly of Sydney Hospital, N.S.W., in his 85th year.

LOWE.—On Oct. 21st, at Birchington, Walter George Lowe, M.D. Lond., F.R.C.S. Eng., formerly of Burton-on-Trent, aged 86 years.

PRICE.—On Oct. 22nd, at "Ambleside," Dudley, Worcs, John Dudley Price, M.R.C.S., aged 73 years.

TIMMINS.—On Oct. 23rd, John Lewes Timmins, M.D. Camb., of Bardon House, East Acton, W., aged 59.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NORTHAMPTON GENERAL HOSPITAL.—The governors have put forward a scheme for extending the hospital at a cost of £65,000. This will include a new children's department, an ear, nose and throat department, an out-patient department, and increased accommodation for the nursing and domestic staffs.

INDUSTRIAL DISABLEMENT IN LANARKSHIRE.—The local medical practitioners' union is putting into force a scheme originated by its president, Dr. George MacFeat of Douglas, to safeguard the convalescence of accident cases. On leaving the hospital any injury needing further treatment will be transferred to the nearest centre under the care of an orthopædic surgeon whose instructions will be carried out by a trained nurse or attendant. The Lanarkshire council has granted the use for this purpose of health centres at Cambusland, Blantyre, Ballshill and Shotts and of its own hospital at Motherwell, while X ray apparatus will be available at the Victoria Infirmary, Glasgow, and at Motherwell. Where patients live remote from these centres they will receive help from the local pithead-bath schemes under the Miner's Welfare Committee. Lanarkshire coalmasters and mine workers are supporting the scheme which has sufficient backing to cover the first year's running, during which help is to be restricted to injured mine workers, although after that it is hoped to extend the project to cover all classes of industrial workers. Members of the practitioners' union are giving their services without payment. Need for such a scheme is apparent from the fact that each year some 7000 mine workers in the county receive compensation for injury.

NOTES, COMMENTS, AND ABSTRACTS

SOME IMPRESSIONS OF MEDICAL AND SOCIAL SERVICES IN LENINGRAD AND MOSCOW

By Doris M. Odlum, M.A., M.R.C.S., D.P.M.

During a visit last August to the U.S.S.R. I had the opportunity of seeing a number of hospitals and social institutions, among them an institute for maternity and child welfare and an abortorium in Leningrad, a prophylactorium for prostitutes and one of the city mental hospitals in Moscow.

Mother and Child Institute in Leningrad

The aim of this institute, which consists of several large two-storeyed buildings standing in a rather neglected part of the city, is to collect into one area all branches of a modern maternity and child welfare service. The antenatal period is carefully safeguarded in Russia. A pregnant woman receives eight weeks' leave of absence before and after childbirth if she is engaged in industry, during which time she is paid full wages. The institute contains an antenatal department (where the walls of the waiting room were decorated with pictures of deformed pelves, varicose veins, hæmorrhoids, and other pathological conditions), a birth control centre, an obstetric block, a ward for premature babies, an out- and in-patients' department for sick babies, a child guidance clinic, a creche, a nursery school, and a kindergarten. These were all used for experimental and research work. Although it has accommodation for only 750 mothers and children there are 100 doctors, with a medical woman at their head, Prof. Julija Mendeleva. The buildings themselves were old and somewhat dilapidated; they had housed a general hospital before the revolution, and the sections which we saw were not particularly well equipped or very clean, and the beds were much closer together than would be permitted in this country.

The department for premature infants is particularly well organised. They are brought here soon after birth from all the maternity hospitals in the town and are placed in incubators or padded hot-water-jacketed metal containers and kept in a heated room. Everything is done for the baby in this room, so that it is never exposed to changes in temperature. As its condition improves it is transferred to cooler rooms, and finally to one at normal temperature. We saw several babies in the hottest room weighing under two pounds. Everyone who approaches them has to wear a mask, and resident wet nurses ensure breast feeding. The survival-rate was stated by the physician in charge of the department to be 75 per cent., which is considerably higher than our own. The use of incubators for premature infants is not, however, universal in Russia. In a large maternity hospital in Moscow they are reported to be never used. The premature babies are kept warm with bottles, but nursed in the ordinary wards, as the physician in charge has found such methods give better results.

An interesting activity of the institution is the provision of legal advice to safeguard the rights and interests of the mother. We saw a queue of women waiting outside the consultation room. According to Soviet legislation divorce can be obtained without any reasons being given on the simple request of either husband or wife, but the father has certain obligations in regard to the maintenance and education of the child up to 18 years of age. In the case of an unmarried woman the father is only legally responsible if the woman can prove paternity. No stigma or loss of legal status attaches to the illegitimate child. It should not, however, be concluded that promiscuity is in any way encouraged in the U.S.S.R. The communist party in Russia, as far as one could gather, does its utmost to discourage profligacy. If the unmarried mother is earning wages she is also obliged to contribute towards the support of her children.

The Practice of Abortion

Every woman over the age of 18 has the right to have an abortion if she is pregnant and does not wish to have a child. The law requires that abortion shall be carried out by a doctor and under hospital conditions. The abortorium which I visited in Leningrad was part of a general hospital. The doctor in charge told me there were four such hospitals in Leningrad, and the number of abortions performed in this one alone approached 1000 a month. Abortion is carried out between the fifth and twelfth weeks of pregnancy, and unless in exceptional circumstances not more often than once a year. I was told that a woman is not usually allowed to have more than three abortions, or four at most. Patients are admitted over night and retained in hospital for two or three days afterwards. They must return on the tenth day to be examined and to receive a certificate of fitness for work. We were taken to a small theatre, clean but very simply equipped. A girl was lifted on the table, strapped in the lithotomy position, and the perineum was shaved and rather casually prepared by a nurse. The doctor then pulled down the cervix and began to dilate it rapidly. The tip of several of the dilators touched the patient's naked buttocks on their journey from the table to the cervix, and none of the scrupulous aseptic precautions employed in this country was taken. The doctor told us, however, that he had had no case of sepsis in the last series of 6000 cases, although four perforations had occurred. When the patient began to feel the pain of dilation an anæsthetic ("ether") was administered on a mask by a nurse, but only sufficient to dull the senses. I was informed that an anæsthetic was usually given for the first abortion, and subsequently, only if the patient asked for it. On full dilation the uterus was emptied with ovum forceps and a blunt curette; considerable bleeding occurred. While the operation was in progress a second patient was wheeled in fully conscious, but she showed no emotion. The whole operation took about five minutes, and the doctor operated on the second patient without further scrubbing up.

In a small labour ward two women were lying close to one another. One was recently delivered, the other in the throes of an obviously obstructed labour. She was on her back wearing a very abbreviated garment, and unscreened from her neighbour. During each pain she bore down with the aid of iron arm rests, fixed to the sides of the bed. The doctor demonstrated to us the use of an obstetric aid which had been invented by a Russian. This consisted of a strong webbing binder, with a central lacing from above downwards. At the onset of a pain the nurse pulled on the lacing from one side and the doctor from the other. This was designed to assist the

expulsive action of the uterus. As the fœtal head was apparent to the naked eye overlapping the symphysis pubis, while meconium and a sausage-shaped bag of membranes appeared with each pain, this was perhaps not a good case on which to demonstrate its value. The doctor invited me to stay and watch the "operation" which he proposed shortly to perform on the woman, but unhappily I had not time. I saw a room full of stretchers, each of which contained six to eight babies ranging from half an hour to a few days old, all tightly swaddled in what looked like strips of firm coarse sheeting. They were in charge of a very kindly elderly doctor who told us that he had had 60,000 babies through his hands. Several nurses were looking after the infants. In the maternity hospitals the babies are not kept in the same room as the mother, but are taken to her only for feeding.

In the contraception clinic women are taught the technique freely, but the doctor in charge said their methods were somewhat behind the times. There were numerous obsolete and unreliable appliances in the cupboards alongside the more modern caps and pessaries. I was told that previous to the revolution and in the period of civil war and unrest which followed it for several years "underground" abortion was extremely common and many cases of sepsis and perforation, as well as permanent invalidism, were known to result from it. The right to abortion is regarded by the State as one of the steps towards removing the sex disabilities under which women suffer. When a woman attends for either an abortion or contraceptive teaching she is given advice about her sex life, regardless of whether she is married or not. We saw several women receiving this instruction.

Sterilisation is legal and can be done on the request of any woman, without medical reasons. The doctor informed us, however, that it is extremely rarely asked for.

Prostitutes and Venereal Disease

In Moscow I saw the prophylactorium where prostitutes with venereal disease are treated medically and at the same time are given an industrial training and education for citizenship. Before the revolution there were 20,000 prostitutes in Moscow alone. Vice was then State controlled. We were shown the yellow tickets that used to be issued to prostitutes in Tsarist days. It is now claimed that there are only 300 professional prostitutes in the city, and these are under the observation of the city militia which is largely composed of women. Two militia women were on duty in a desk at the entrance to the prophylactorium, their function being to see that the inmates did not steal any of the hospital property. Patients are required to undertake to reside in the institution for a minimum of two years, and are then rehabilitated, posts being found for them in factories or elsewhere. In practice they seem to be free to leave at any time, but if they remain must submit to the régime. The doctor told us that they did sometimes leave, but practically always returned as they found themselves unable to obtain work and quickly became destitute.

Part of the same institution was set aside for young girls and children who had been sexually assaulted. These girls lived separately from the prostitutes, sharing with them a workroom where they were under supervision all the time.

The patients are allowed to go out freely in the mornings, but never in the afternoon or evening. Various handicrafts are taught and wages are paid for the products sold. Care is taken to keep the evenings fully occupied as this is the time when the women are most restless and difficult. There were about 150 beds and a number of doctors in charge, including three psychiatrists. One of them, who spoke excellent French, told me that there were psychiatrists officially attached to the public schools; that Moscow was divided into ten districts, each with a dispensary or polyclinic; and that there was a psychiatric service in each dispensary.

The living conditions were extremely plain, but everything was clean and there was a general atmosphere of friendliness between staff and patients. A considerable number of people of both sexes and all types and nationalities were being shown round while I was there, and so far as I could judge this was not resented by the patients. A heavy fine is said to be inflicted by law on any person who is proved to have infected another with venereal disease.

Mental Illness

The mental hospital which I visited was on the outskirts of Moscow and had accommodation for 1500 patients. There were 70 doctors and a very large nursing staff, including specialists in physical training and handicrafts. This hospital was one of two in the city which dealt with psychotic patients only. There are other institutions for psychoneuroses, for mental defectives, for epileptics, and for criminal lunatics. All patients are sent in on a medical recommendation from a doctor in charge of one of the regional psychiatric clinics, and discharged only on the advice of the medical superintendent or on the application of relatives if these are held to be capable of taking care of the patient. No charge is made for maintenance or treatment. There are sections for men and for women; the doctors said that they have a few children from time to time, but I did not see any. The doctor-in-charge gave me reprints of researches carried out at the hospital—one on the treatment of schizophrenia, the other on the pyrexial treatment of general paralysis by malaria and rat-bite fever, the latter based on work recently done in America. He had been favourably impressed by the effects of certain endocrine preparations, notably Gravidan, in cases of katatonia and involutional psychoses. At this hospital treatment by injection of normal blood and malaria is also being tried for schizophrenia. According to the usual continental practice there are no padded rooms, and no restraint of any kind is used; restless patients are treated by narcotics, of which medinal and luminal are most popular. Paraldehyde is also used. Warm baths are employed to some extent, and I saw several patients undergoing this treatment. The patients are graded into restless, quiet, and convalescent.

Although the buildings are old and badly need redecoration the conditions for the quiet patients appear to be quite good. There are small wards of from six to eight beds, well lighted and ventilated, opening on a long and wide corridor, on the other side of which are single rooms. These are tastefully although simply furnished; some contain books and photographs and all have flowers. They were occupied by patients who were mentally able to appreciate them. The day-rooms are at the end of the corridor. The patients were mostly occupied, many of them weaving on small hand looms. The doctor told us that occupational therapy is universal, efforts being made to suit the work to the patient, whether it takes the form of handicraft or of participation in the utility services of the hospital. There is a farm outside the city to which both men and women

patients who are able to benefit from outdoor work are transferred.

The conditions for the restless patients, of whom a great many were schisophrenics, seemed somewhat gloomy. The rooms were quite bare and most of the patients seemed unoccupied. There were female nurses in all the wards and a few male attendants in the section for restless male patients. The female patients wear a loose white shapeless overgarment reaching from the neck to the feet; these were quite clean but gave the impression of a long smock, not very attractive. As, however, there is a great shortage of every kind of clothing and the dress of the general population is extremely poor, it would not be reasonable to criticise this. The head doctor told me that a residential village colony on the lines of that of Gheel in Belgium, where patients are boarded out with the peasantry, was about to be started.

The convalescent section was housed in a separate building, rather like a working man's club in England. There were separate dormitories for men and women, but they mixed freely in the common rooms and at meal times. In one room a game of billiards was in progress when we passed, in another patients were playing draughts and chess, some were reading, others talking. There were no nurses or attendants in evidence: patients go to this section for a month's convalescence prior to discharge. I was told that sometimes a mildly psychotic patient is admitted direct to the convalescent section from the city dispensaries. I asked if psycho-analysis was practised either on psychotics or on psychoneurotics. Very little, was the reply.

The hospital buildings were situated in extensive gardens, not laid out formally but resembling a park with many fine trees. I was much impressed by the friendly spirit that existed in the hospital between doctors, nurses, and patients.

The Doctor's Status

The doctors with whom I talked told me that the course of medical training, formerly five years, was now, owing to the extreme shortage of doctors especially in the remoter districts, being reduced for the time to four and even to three and a half years. A junior doctor receives about 350 roubles, rising to 600 roubles a month for more responsible work. Heads of institutions and professors receive higher salaries, up to 2000 roubles a month. Practically every doctor is attached to a State hospital or clinic. Private practice is, however, permitted even for those who hold special appointments, but there are few people wealthy enough to employ private doctors, even if they wished to do so. In trying to arrive at a comparative standard of values it is noteworthy that an ordinary factory worker receives from 100 to 200 roubles a month, and an overseer up to 600.

I was much impressed by the large number of doctors on the staff of all the institutions I visited—in every case this was many times in excess of the numbers in this country. I understand, however, that they only work for seven hours a day. In some cases, I was told, the doctors held two paid appointments in order to earn more money; this would mean a working day of 12–14 hours. Everyone in Russia works for a five-day week, the sixth day being a day of rest. Doctors, however, and some other classes of workers (including Intourist guides) are allowed to arrange their work so as to take two or three days of rest consecutively, if circumstances permit. Everyone has a fortnight to a month's holiday a year on full pay. No doctors seem to possess motor-cars, with the possible exception of a few outstanding people, or in remote districts where a car is necessary to get about. The ownership of a car is dependent on State permission, and not on financial status.

Special privileges and honours are given to medical men and women or scientists who are doing original or creative work. It is said that Pavlov is the only person in Russia who dares to flout authority!

I was everywhere impressed by the simplicity and tranquil kindliness of the hospital atmosphere. In spite of the lack of formality and the absence of hurry or any evidence of the red-tape type of efficiency, everything appeared to be carried out in a capable and orderly manner.

SPECIAL CENTRES FOR RADIOLOGY

THE organisation of the fight against cancer is a subject of universal interest. It was the subject of debate at the fourth International Congress of Radiology recently held, and the papers read by 28 representatives from the principal countries taking part in the congress, with summaries in three languages, have now been issued in book form.[1] The trend of the Organisation des Krebsbekämpfung is towards centralisation, and the scheme which has been evolved in Sweden under the able leadership of Prof. G. Forssel is generally accepted as a model. In that country the surgical treatment of cancer continues to be carried out in the ordinary hospitals; radiological treatment has been centralised in three special centres, to which all cancer patients for whom this form of therapy may be required are referred. Radium surgery and therapy by large radium units (bombs) are carried out on lines laid down by the experienced therapists of Radiumhemmet at Stockholm, and deep X ray therapy has also been, to a certain extent, standardised, although the individual therapist is not hampered by red tape. General teaching of students about cancer and its treatment is given in the ordinary hospitals; radiotherapy is regarded as a post-graduate subject, instruction being given at the special centres.

Probably such perfect control is only attainable in a comparatively small country, but it is the aim of most national campaigns to group their districts round suitable centres—usually universities—and this has been done with marked success in France and Belgium. The report from these countries lays stress on the scientific side of the work; every facility for research from the physical, biological, and statistical aspect is provided on a generous scale in the same centre where the patient is treated. America appears to be the home of experiment, and the research recorded here into the possibilities of very high-tension (million volt) currents merits special mention, while the education of the public has been specially studied. It is, however, obvious that the value of propaganda is by no means universally accepted, and this is not surprising in view of the scanty information on prophylaxis yet available. In Germany and Italy special centres are also available, and much research is in progress. Nearly every country has some suggestion of value to bring forward. Great Britain, represented by Colonel A. B. Smallman, contributed a valuable report on cancer mortality.

The fear is sometimes expressed that, if the therapy of cancer comes to be closely associated with radiology, the importance of surgery will be overlooked; a study of these papers shows that surgery is still given first place, but that the radiologist claims a right to be called into consultation as a clinician in those cases where every resource of modern therapy will be required if the patient is to have a fair chance. The practice of radiotherapy is an exacting specialty, requiring as its foundation a sound and extensive

[1] Organisation des Krebsbekämpfung. Kommissionsverlag Georg Thieme. Leipzig, 1934.

knowledge of surgery, experience in gynæcology and laryngology, and enough knowledge of medicine to follow modern work on hæmatology, serology, the chemistry of the internal secretions, and other lines of research. The ideal centre would have radiologists of this calibre on its staff, and give them the opportunity of working with colleagues each possessed of highly specialised knowledge; the clinical experience provided in such a centre would eventually allow the radiotherapist to take his place as a leader in the fight against cancer.

TOM TIDDLER'S GROUND

THE communication to the motorist of the nervousness long felt by the pedestrian is the most noticeable result of the issue of new regulations governing the behaviour of both at official crossing places in London. Ultimately this may be a good thing; during these first few days, however, the hesitant approach of the driver, his uneasy glance to right and left followed by jerky acceleration or sudden application of brakes has, with reason, diminished rather than increased the confidence of the pedestrian. The "Belisha faces" which *Punch* pictured last week as being smug and condescending as their owners stride across the road holding up the traffic, are actually harassed by anxiety whether placing one foot on the crossing puts them within the meaning of the Act or only makes them liable to have their toes crushed. Early this week some pedestrians stood rather pathetically touching a post and waved the cars on, sometimes, however, omitting to observe the sound golfing rule that "the call through" once made can never be revoked except by permission. Those who started to cross looked away rather than towards the cars approaching them and scuttled over the Tom Tiddler's ground between the silvered-studs with little confidence that their new ground rights would be respected; in fact some, to their real danger, turned back in alarm when half-way across. It seems probable that motor-drivers as well as pedestrians would benefit by an additional regulation enabling the latter to give notice of intention to cross before starting to do so.

CERTIFICATE A

IN an article entitled "The *Lancet* Deludes," a writer in the *Animals' Defender and Zoophilist* (October, 1934) says that we have supplied "grossly misleading information on the way vivisection is practised in England." The passage thus interpreted appears in our issue of Aug. 18th (p. 389) and is correctly quoted as follows:

> It should be noted that Certificate A which allows experiments to be performed without anæsthetics is granted only for such as are attended by no considerable pain. The certificate is in fact not required to cover the operative procedure, but to allow of the subsequent course of the experiment.

Our critic is right in pointing out that the full statement in the Government report we were reviewing is that "the *operative procedures* in experiments performed under Certificate A, without anæsthetics, are only such as are attended by no considerable, if appreciable, pain" (our italics). If by using the word "experiments" instead of "operative procedures" we had tried to suggest that all that is done under Certificate A is necessarily painless—and this is the charge against us—we should certainly have been guilty of misleading readers. But it is perfectly clear from the next four sentences (only the first of which is quoted by our critic) that we are making no such attempt. For they are explicitly devoted to considering how much pain is actually inflicted.

> . . . The certificate is in fact not required to cover the operative procedure but to allow of the subsequent course of the experiment. "It must not be assumed," Dr. Giles remarks, "that the animal is in pain during the whole of this time. In cases of prolonged action of an injected substance, even when ending fatally, the animal is generally apparently well, and takes its food as usual, until a short time before death. The state of illness may only last a very few hours, and in some cases it is not observed at all."

DANZIG DOCTORS PROTEST

A RECENT issue of the *Danziger Vorposten*, taking as its text the alleged word of a Jewish leader, "Make your children doctors and pharmacists in order that they may take the life of Christians," saw fit to tirade against such pioneers as Ehrlich, Behring, Calmette, Neisser, Wassermann and against German medicine "led astray" by such teachers. This, says the *Danziger Aerzteblatt*, goes beyond what the medical profession can put up with in silence, when a great German doctor physician is stamped as a Jew in order to bring him into disrepute together with the world-famous discoverers who, although of Jewish blood, were an ornament to German science. The protest continues: "Even if Germany does at the moment find itself in a state of siege conducted by world Jewry, it is still not admissible to deny the tremendous services of an Ehrlich or a Wassermann, any more than it was at the time of the world war to deny the scientific greatness of Pasteur or Lister or Pavlov. That will please only our opponents throughout the world who are lying in wait for us to show such cracks in our armour." We quote from the *Münchener Medizinische Wochenschrift* of Oct. 5th.

CIBA

THE Society of Chemical Industry in Basle, popularly known as Ciba, has issued a history of its activities through fifty years—1884 to 1934—and celebrates the jubilee with a *de luxe* publication. The technical development of the Society, as of any large chemical industry, makes informing reading for all medical men, but the production by Ciba of medicinal products, which began rather more than fifty years ago, has a more intimate interest. Pure chemistry at the beginning of last century was fostered by research workers who were frequently trained at first as pharmacists. It was due to much of their work that the production of scientifically prepared remedies was transferred from the apothecary to the department of industrial chemistry, research being conducted on lines that were beyond the scope of individual energy. Fifty years ago Ciba possessed plant and laboratory equipment which enabled it to make notable discoveries. This publication refers to Phytin as the product which might be looked upon as a real foundation of the Society's series of pharmaceutical specialties but frequent evidence will be found in our columns of many other valuable products which have issued from the Ciba laboratories, to which a large biological department has now been added.

NEW PREPARATIONS

EPHEDRINE.—British Drug Houses Ltd. have issued from their propaganda department a pamphlet calling attention to the value of this drug in many conditions such as whooping-cough, asthma and hay-fever, obstetric shock and dangerous fall in blood pressure, nocturnal enuresis, and other serious conditions. The pamphlet is made up mainly by the collation of excerpts from the *British Medical Journal*, the *Journal of the American Medical Association*, and *The Lancet*, the claims put forward for the drug in various conditions being thus supported by the clinical authority of reported cases.

CHEMISTRY IN COMMERCE.—Under the advisory editorship of Mr. M. D. Curwen, B.Sc., Messrs. George Newnes Ltd. are bringing out in about 32 weekly parts (at 1*s.* each) a compendious book on Chemistry in Commerce. The work differs from ordinary text-books in being a series of complete articles each of them describing first the manufacturing process, and then the tests and analyses as carried out in the works laboratory. Each article is from the pen of the chief chemist of an important commercial undertaking who is in a position to write with authority on such things as medicinal chemicals and drugs, food preserving, sugar refining, milk distribution, and so forth.